United States
Department of
Agriculture

Natural
Resources
Conservation
Service

In cooperation with Illinois
Agricultural Experiment
Station

Soil Survey of McHenry County, Illinois

Part I

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How To Use This Soil Survey

This survey is divided into three parts. Part I includes general information about the survey area; descriptions of the general soil map units, detailed soil map units, and soil series in the area; and a description of how the soils formed. Part II describes the use and management of the soils and the major soil properties. This part may be updated as further information about soil management becomes available. Part III includes the maps.

The **detailed soil maps** can be useful in planning the use and management of small areas.

To find information about your area of interest, locate that area on the **Index to Map Sheets**. Note the number of the map sheet, and turn to that sheet.

Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Turn to the **Contents** in Part I of this survey, which lists the map units and shows the page where each map unit is described.

The **Contents** in Part II shows which table has data on a specific land use for each detailed soil map unit. Also, see the **Contents** in Part I and Part II for other sections of this publication that may address your specific needs.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, state agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1995. Soil names and descriptions were approved in 1997. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1995. This survey was made cooperatively by the Natural Resources Conservation Service and the Illinois Agricultural Experiment Station. It is part of the technical assistance furnished to the McHenry County Soil and Water Conservation District. Funding was provided by the McHenry County Board and the Illinois Department of Agriculture.

Cover: Ongoing population growth in McHenry County continues to generate changes in land use.

Additional information about the Nation's natural resources is available on the Natural Resources Conservation Service homepage on the World Wide Web. The address is http://www.nrcs.usda.gov.

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Foreword

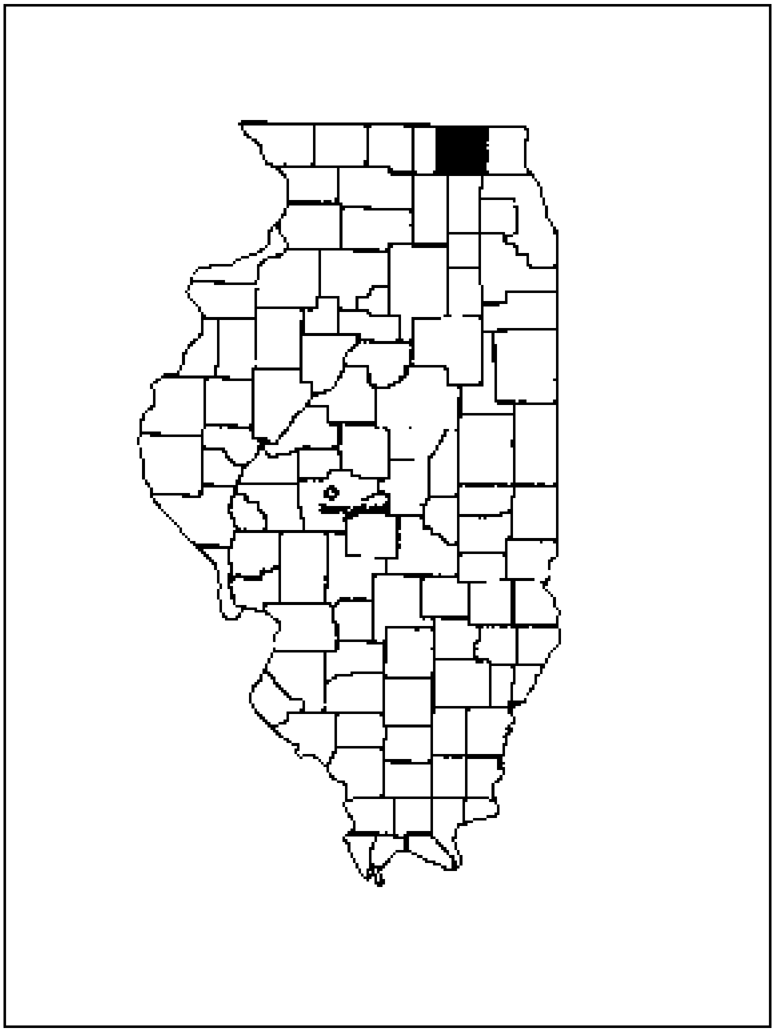
This soil survey contains information that can be used in land-planning programs in McHenry County. It contains predictions of soil behavior for selected land uses. The survey also highlights limitations and hazards inherent in the soil, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil survey is designed for many different users. Farmers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described, and information on specific uses is given. Help in using this publication and additional information are available at the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

William J. Gradle
State Conservationist
Natural Resources Conservation Service



Location of McHenry County in Illinois.

Soil Survey of
McHenry County, Illinois

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United States Department of Agriculture, Natural Resources Conservation Service,
in cooperation with
the Illinois Agricultural Experiment Station

McHenry County is in northeastern Illinois. It has an area of 391,220 acres, or 611 square miles. In 1990, the population of the county was 183,241 (U.S. Department of Commerce, 1990). Woodstock is the county seat. Crystal Lake and McHenry are the largest cities. The county is bordered by Kenosha and Walworth Counties, Wisconsin, on the north; by Lake County on the east; by Cook, Kane, and DeKalb Counties on the south; and by Boone County on the west.

This soil survey updates the survey of McHenry County published by the University of Illinois in 1965 (Ray and Wascher, 1965). It provides additional information and has larger maps, which show the soils in greater detail.

General Nature of the Survey Area

This section provides general information about McHenry County. It describes history; physiography, relief, and drainage; natural resources; urbanization; agriculture; transportation facilities; industry; and climate.

History

Nancy J. Fike, McHenry County Historical Society, helped prepare this section.

A small number of Indians, primarily Potawatomi, lived in the survey area. They were protected by the Treaty of Chicago until 1836. This treaty did not really prevent the settlement of the area by immigrants. Some of the earliest settlers were Samuel and Margaret Gillilan of West Virginia. In 1834, they took up land on the west side of the Fox River between Algonquin and Cary.

Like several other northern Illinois counties, McHenry County looked to southern Illinois for its name. William McHenry of White County served as a state representative, as a major during the Black Hawk War of 1832, and then as a state senator. When he died in 1835, the Illinois State Legislature decided to honor him by naming a new county after him.

McHenry County was established in 1836. It was initially comprised of present-day McHenry and Lake Counties. By 1839, the large population of the eastern portion of the area warranted separation into two

counties. From 1836 until 1844, McHenry served as the county seat. In 1844, the county seat was moved to the geographic center of the county, Centerville, which was renamed Woodstock in 1845.

Subsistence farming characterized settlement until just after the Civil War. With the development of refrigerated railroad cars, the shipping of milk became practical and profitable. From then until after World War II, McHenry County was a major dairy producing area.

Physiography, Relief, and Drainage

The county is comprised of moraines, outwash plains, stream terraces, flood plains, kames, kame terraces, eskers, lake plains, and bogs. A prominent north-south moraine, the Marengo Ridge, occurs in the western part of McHenry County in line with the towns of Harvard and Marengo. This moraine and all of the county to the east is in the Wheaton Morainal Country of the Great Lakes Section of the Central Lowland Province (Leighton and others, 1948). The remainder of the county west of the Marengo Ridge is in the Rock River Hill Country of the Till Plains Section of the Central Lowland Province.

The highest elevation in the county is about 1,190 feet above sea level. It is about 4.5 miles northeast of Harvard on the West Chicago Moraine. The lowest elevation is about 730 feet at the point where the Fox River leaves the county south of Algonquin.

The western part of the county is drained by the Kishwaukee River, which flows generally toward the west. Two tributaries, Piscasaw and Rush Creeks, flow southwest into the Kishwaukee River. A third tributary, Coon Creek, flows in a northwesterly direction into the river. The eastern half of McHenry County is drained by the Fox River, which flows south. Boone and Nippersink Creeks are the main tributaries of the Fox River.

Several important lakes are in the eastern part of the county. The largest natural lake is Pistakee Lake. Wonder Lake is the largest manmade lake.

Natural Resources

Sue Ehardt, zoning enforcement officer, McHenry County Planning and Zoning Department, helped prepare this section.

McHenry County is well known for its sand and gravel resources. The sand and gravel materials deposited by glacier action have proven to be a major resource in the county and are the most extensive deposits in northeastern Illinois (Masters, 1978). In 1975, McHenry County was the top producer of sand and gravel in Illinois. The county remains a major producer of this resource. Approximately two-thirds of the county is underlain by various types of gravel.

In 1989, a comprehensive inventory of gravel mining operations was undertaken in an attempt to provide a complete informational document for reviewing gravel mining operations on a countywide basis. The inventory included two designations of earth extraction—”borrow pit” and “pit.” The designation of “borrow pit” was assigned to areas where activity could be visually seen but apparent use was obviously limited. These “borrow pits” were generally in areas of predominantly agricultural use, did not appear to be of sufficient size to maintain a commercial operation, and were more than likely used as a source of gravel for use on the farm itself. The second designation of “pits” was given in those instances where the size and location of the “pit” appeared to lend themselves to more of a commercial use of the gravel extraction. Based upon the information in the inventory, a task force determined that 31 active pits existed within McHenry County.

Urbanization

Brian P. Depies, planner, McHenry County Department of Planning and Development, helped prepare this section.

In the 1830’s, land was sold in 80-acre tracts for $1.25 an acre. The cheap, available land spurred a large influx of people into McHenry County. Between 1840 and 1850, the population increased from 2,575 to 14,978, or by 481 percent. After a 47 percent increase in population from 1850 to 1860 (from 14,978 to 22,089), population growth stabilized and stayed on average at about 7 percent until the 1940’s. Among the major attractions of McHenry County were the rich agricultural soils.

During the last 50 years, McHenry County has seen significant jumps in population of 20 percent or more over 10-year spans. The 1990 U.S. census reported 183,241 residents in McHenry County. This number represents a 24 percent increase in population since the 1980 U.S. census and represents the largest percent increase of any county in Illinois during this period of time. Today, about 60 percent of the county is still used for some form of agriculture.

Over the last 25 years, the migration of people from urban to suburban areas has had a significant impact on land use in McHenry County. The southeastern part of the county has been more intensively developed for urban uses, while the western part has felt the pressure of residential development in the form of small hobby farms and large lot estates ranging in size from 1 to 5 acres.

Although the push for development is growing

stronger throughout the county, a balance can be struck between accommodating a broad range of human activities and preservation of the environment and natural resources. With proper siting of transportation facilities, industrial parks, and residential developments, McHenry County can maintain areas set aside for agricultural use while accommodating the residential needs in the area.

Agriculture

McHenry County is one of the fastest growing counties in the state in terms of population. This rapid urbanization has resulted in a tremendous change in land use in the county (fig. 1). The number of farms in McHenry County dropped from 1,136 in 1987 to 985 in 1992 (U.S. Department of Commerce, 1992). Since

Figure 1.—Because of significant increases in population over the past two decades, land use in McHenry County has been shifting from agricultural to urban.

1950, the number of farms has decreased by 1,440. Likewise, the total acreage in farms decreased from 265,908 in 1987 to 249,240 in 1992. The average farm size, however, increased from 234 to 253 acres.

Agriculture in McHenry County consists of commodity crop production, livestock, and specialty crops, such as vegetables, turf, and landscape materials. The largest agricultural land use is the production of corn, soybeans, wheat, oats, and hay. Corn accounts for 53 percent of the cropland acreage, soybeans for 27 percent, small grain for 4 percent, and hay for 12 percent.

In 1994, the number of swine was 44,200 and the number of cattle was 38,500 (Illinois Cooperative Crop Reporting Service, 1995). Dairy farming is an important part of livestock production. McHenry County ranks fourth among Illinois counties in total dairy production. Other types of animal production include horses and exotic animals, such as llamas and emus.

Transportation Facilities

Nancy L. Baker, McHenry County Highway Department, helped prepare this section.

McHenry County's transportation system provides passenger and freight access to the Chicago, Rockford, and Milwaukee metropolitan areas. The road network includes the Northwest Tollway (I-90); U.S. Highways 12, 14, and 20; and State Highways 22, 23, 31, 47, 62, 120, 173, and 176. McHenry County itself has a well developed county highway system that provides connections between incorporated and unincorporated areas.

Commuter rail is the major mode of public transportation in the county. Commuter rail service to and from Chicago is available in the communities of Harvard, Woodstock, Crystal Lake, Cary, and Fox River Grove. A branch line links McHenry to the main commuter line to Chicago. Freight is also shipped by rail. Several lines through the county provide easy access. Fixed route and demand-response bus service is available in several communities.

McHenry County is served by three general aviation airports. These are Dacy Airport near Harvard, Galt Airport near Greenwood, and the Lake in the Hills Airport.

Industry

There are nearly 900 manufacturing firms in the survey area. McHenry County is home to a wide variety of companies that manufacture such items as electric timers, plastic molds, cellular phones, computer components, and medical products. McHenry County is especially attractive to industry because of its large labor pool, extensive transportation system, and access to major markets, such as Chicago, Milwaukee, and Rockford.

Climate

Table 1 gives data on temperature and precipitation for the survey area as recorded at Marengo in the period 1961 to 1990. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter, the average temperature is 21.7 degrees F and the average daily minimum is 12.7 degrees. The lowest temperature on record, which occurred at Marengo on January 11, 1979, is -29 degrees. In summer, the average temperature is 70.7 degrees and the average daily maximum temperature is 83.1 degrees. The highest recorded temperature, which occurred at Marengo on July 14, 1936, is 109 degrees.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total annual precipitation is 36.18 inches. Of this, 23.71 inches, or about 66 percent, usually falls in April through September. The growing season for most crops falls within this period. In 2 years out of 10, the rainfall in April through September is less than 13.44 inches. The heaviest 1-day rainfall during the period of record was 4.07 inches on July 2, 1978.

The average seasonal snowfall is 35.5 inches. The greatest snow depth at any one time during the period of record was 38 inches on January 17, 1979. On the average, 36 days of the year have at least 1 inch of snow on the ground. The number of such days varies greatly from year to year. The heaviest 1-day snowfall was 12 inches on January 1, 1979.

The average relative humidity in midafternoon is about 60 percent. Humidity is higher at night, and the average at dawn is about 80 percent. The sun shines 67 percent of the time possible in summer and 47 percent in winter. The prevailing wind is from the south-southwest. Average windspeed is highest, 12 miles per hour, in April.

Tornadoes and severe thunderstorms strike

occasionally. They are of local extent and of short duration and cause only sparse damage in narrow areas. Hailstorms sometimes occur during the warmer periods.

How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. Soil scientists observed the steepness, length, and shape of the slopes; the degree of erosion; the general pattern of drainage; and the kinds of crops and native plants. To study the soil profile, which is the sequence of natural layers, or horizons, soil scientists examined the soil with the aid of a soil probe or spade. The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils and miscellaneous areas in the survey area are in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind or segment of the landscape. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landscape, soil scientists develop a concept, or model, of how the soils were formed.

Individual soils on the landscape commonly merge into one another as their characteristics gradually change. To construct an accurate map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Fieldwork in McHenry County consisted primarily of soil transects conducted by soil scientists. Soil transects are a systematic way of sampling a specific soil type. Soil borings are taken at regular intervals. Soil scientists then record the characteristics of the soil profiles that they study. They note soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features. This information can then be used to run statistical analyses for specific soil properties. These results, along with other observations, enable the soil scientists to assign the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

Aerial photographs used in this survey were taken in 1988. Soil scientists also studied U.S. Geological Survey topographic maps enlarged to a scale of 1:12,000, ortho-photographs, and infrared photography to relate land and image features. Specific soil boundaries were drawn on the ortho-photographs. Adjustments of soil boundary lines were made to coincide with the U.S. Geological Survey topographic map contour lines and tonal patterns on aerial photographs.

Formation and Classification of the Soils

This section relates the soils in the survey area to the major factors of soil formation and describes the system of soil classification.

Factors of Soil Formation

Soil forms through processes that act on deposited geologic material. The factors of soil formation are the physical and mineralogical composition of the parent material; the climate in which the soil formed; the plant and animal life on and in the soil; relief; and the length of time during which the processes of soil formation have acted on the parent material (Jenny, 1941).

Climate and plant and animal life are the dominant active factors of soil formation. They act directly on the parent material, either in place or after it has been moved from place to place by water, wind, or glaciers, and slowly change it into a natural body that has genetically related horizons. Relief modifies soil formation and can inhibit soil formation on the steeper, eroded slopes and in wet, depressional or nearly level areas by controlling the moisture status of soils. Finally, time is needed for changing the parent material into a soil that has differentiated horizons.

The factors of soil formation are so closely interrelated and conditioned by each other that few generalizations can be made regarding the effects of any one factor unless the effects of the other factors are understood.

Parent Material

Parent material is the geologic material in which a soil forms. Most of the soils in McHenry County were derived from parent materials that are a direct or indirect result of glaciers. The parent materials in this survey area are glacial till; glacial outwash; loess, or silty material; organic deposits; alluvium; lacustrine deposits; and bedrock.

Glacial till is nonstratified drift transported and deposited directly by glacial ice. The majority of till deposits in McHenry County occur as a series of morainal ridges and till plains that were formed as the retreating glaciers moved eastward. There were three different glacier formations across the county, and five different till members have been identified. The oldest of these till members is the Belvidere Member of the Glasford Formation, which is of Illinoian age (Berg and others, 1985). It occurs in the western and southwestern parts of the county. Danabrook soils formed in this material. The next oldest till member, which is late Illinoian, is the Capron Member. It is part of the Winnebago Formation and occurs in the northwestern part of the county. Piscasaw and Torox soils formed in this material. The other three till members are Wisconsinan and are part of the Wedron Formation. The oldest of these is Tiskilwa till, which makes up the Marengo Ridge. Kidami soils formed in this material. The next till member, Yorkville till, generally contains the most clay of all the till members. The clay mineralogy is dominantly illitic. This till member is south of Woodstock and extends in a southerly and southeasterly direction to the county line. Elliott and Ozaukee soils formed in Yorkville till. The youngest till member in McHenry County is the Haeger Member. It is sandy loam and generally contains more gravel than the other till members. It makes up the West Chicago Moraine, lying directly east of the Marengo Ridge in the northern half of the county and extending through Woodstock in a southeasterly direction to Algonquin. Kidder and Ringwood soils formed in the Haeger till.

Glacial outwash was deposited by running water from melting glaciers. The size of particles varies, depending on the speed of the stream that carried the material. When the water slowed down, the coarser particles were deposited. The finer particles were carried a greater distance by slower water. Outwash deposits in McHenry County range from loamy sediments to sand and gravel. Landscapes include outwash plains, stream terraces, kames, and eskers. Fox soils, for example, formed in loamy deposits over sand and gravel.

Sometime after the glaciers retreated, conditions became drier and the winds increased. A thin, discontinuous layer of silty material, or loess, was deposited over the county directly by the winds. The primary sources of the loess were the flood plains along major rivers. Some of the silty material in the county may be of local origin since it contains more

sand than loess typically does. Thickness of the silty material generally ranges from 2.0 to 3.5 feet west of the Marengo Ridge. The ridge itself and areas to the east generally have a loess cover less than 2 feet thick. Proctor soils formed in silty material and in the underlying outwash.

Organic material consists of plant remains. After the glaciers receded, water was left standing in various landform depressions. These areas were very wet during the time of soil formation. As a result, the decaying grasses and sedges accumulated more rapidly than the rate of decomposition. Most of the plant material has decomposed to a point where it is not recognizable. These organic deposits are called muck. Houghton soils formed in this organic material.

Alluvium is material recently deposited by streams. It varies in texture, depending on the speed of the water from which it was deposited. Millington soils formed in loamy alluvium.

Lacustrine material was deposited from still or ponded glacial meltwater. After the coarser fragments were deposited as outwash by moving water, the finer particles, such as very fine sand, silt, and clay, settled in still water. Martinton soils formed in lacustrine deposits.

A very small area on the western edge of the county formed in glacial drift that is moderately deep over limestone bedrock. Rockton soils formed in this material.

Climate

McHenry County has a temperate, humid continental climate. The general climate has had an important overall influence on the characteristics of the soils. Climate is essentially uniform throughout the county, however, and has not caused any major differences among the soils.

Climate has very important effects on weathering, vegetation, and erosion. The weathering of minerals in the soil increases as temperature and rainfall increase. As water moves downward, clay is moved from the surface soil to the subsoil, where it accumulates. The water also dissolves soluble salts and leaches them downward. Climate also influences the kind and extent of plant and animal life. The climate in McHenry County has favored prairie grass and hardwood forests. Heavy rains can harm exposed areas of soils that have been farmed. Spring rains and wind can cause extensive erosion when crop residue and trees are removed from the surface. More soil will be lost through erosion each year than is formed by natural processes.

Living Organisms

Soils are affected by the vegetation under which they formed. The main contribution of the vegetation and biological processes is the addition of organic matter and nitrogen to the soil. The amount of organic material in the soil depends on the kind of native plants that grew on the soil. Grasses have many fine fibrous roots that add large amounts of organic matter to the soil when they die and decay. Soils that formed under prairie vegetation, therefore, have a thick, black or dark brown surface layer. Parr, Ringwood, Warsaw, and Waupecan soils formed under prairie vegetation. In contrast, the soils whose native vegetation was deciduous trees have a thin, light-colored surface layer because less organic matter is added to the soil by tree roots than by the prairie vegetation. Casco, Kidami, and Kidder soils formed under forest vegetation.

Bacteria, fungi, and other micro-organisms help to break down the organic matter and thus provide nutrients for plants and other soil organisms. The stability of soil aggregates, which are structural units made up of sand, silt, and clay, is affected by microbial activity because cellular excretions from these organisms help to bind soil particles together. Stable aggregates help to maintain soil porosity and promote favorable relationships among soil, water, and air. Moreover, earthworms, crayfish, insects, and burrowing animals tend to incorporate organic matter into the soil and help to keep soils open and porous.

Relief

Relief, which includes elevation, topography, and water table levels, largely determines the natural drainage of soils. In McHenry County, the slopes range from 0 to 30 percent. Natural soil drainage classes range from well drained on the side slopes and ridges to very poorly drained in depressions.

Relief affects the depth to the seasonal high water table or natural drainage of the soil by influencing infiltration and runoff rates. The poorly drained Dunham and Selmass soils are in low-lying, nearly level areas and have a water table close to the surface for most of the year. The soil pores contain water, which restricts the circulation of air in the soil. Under these conditions, iron and manganese compounds are chemically reduced. As a result, the subsoil is dull gray and mottled. In the more sloping, well drained Griswold soils, the water table is lower and some of the rainfall runs off the surface. The soil pores contain less water and more air. The iron and manganese

compounds are well oxidized. As a result, the subsoil is brown.

Nearly level, poorly drained soils, such as Pella soils, are less well developed than the gently sloping, well drained Proctor soils. Pella soils have a high water table for part of the year. The wetness inhibits the removal of weathered products. In contrast, Proctor soils are deeper to a water table. As a result, weathered products are translocated downward to a greater extent.

Local relief also influences the severity of erosion. Some erosion occurs on all sloping soils, but the hazard becomes more severe as the slope and the runoff rate increase.

Time

The length of time needed for the formation of a soil depends on the other factors of soil formation. Soils form more rapidly and are more acid if the parent material is low in lime content. Thus, more rapidly permeable soils form more readily than more slowly permeable soils because lime and other soluble minerals are leached more quickly. Forest soils form more quickly than prairie soils because grasses are more efficient in recycling calcium and other bases from the subsoil to the surface layer. Soils in humid climates that support good growth of vegetation form more rapidly than those in dry climates.

The length of time that the parent materials have been in place determines, to a great extent, the degree of profile development. Most of the soils in McHenry County began forming with the retreat of the last glacier about 12,500 years ago. On flood plains, however, material is deposited during each flood. This continual deposition slows development. Millington soils formed in alluvium and have a very weakly developed profile.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (Soil Survey Staff, 1999). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 4 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Twelve soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in sol. An example is Mollisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Aquoll (Aqu, meaning water, plus oll, from Mollisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Endoaquolls (Endo, meaning soils with endosaturation, plus aquoll, the suborder of the Mollisols that has an aquic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective Typic identifies the subgroup that typifies the great group. An example is Typic Endoaquolls.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, thickness of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-silty, mixed, mesic Typic Endoaquolls.

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. The texture of the surface layer or of the substratum can differ within a series. An example is the Dunham series.

Soil Series and Detailed Soil Map Units

In this section, arranged in alphabetical order, each soil series recognized in the survey area is described. Each series description is followed by descriptions of the associated detailed soil map units.

Characteristics of the soil and the material in which it formed are identified for each soil series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the “Soil Survey Manual” (USDA, 1993). Many of the technical terms used in the descriptions are defined in “Soil Taxonomy” (USDA, 1999). Unless otherwise stated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units on the detailed soil maps in this survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this section, along with the maps, can be used to determine the suitability and potential of a unit for specific uses. They also can be used to plan the management needed for those uses. More information about each map unit is given in Part II of this survey.

A map unit delineation on the detailed soil maps represents an area on the landscape and consists of one or more soils or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils and miscellaneous areas are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some “included” areas that belong to other taxonomic classes.

Most included soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, soils. They may or may not be mentioned in the map unit description. Other included soils and miscellaneous areas, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, soils. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. The included areas of contrasting soils or miscellaneous areas are mentioned in the map unit descriptions. A few included areas may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of included areas in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into segments that have similar use and management requirements. The delineation of such landscape segments on the map provides sufficient information for the development of resource plans, but if intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit.

Soils that have profiles that are almost alike make up a soil series. Except for differences in texture of the surface layer or of the underlying layers, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer or of the underlying layers. They also can differ in slope, stoniness, salinity, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into soil phases. Most of the areas shown on the detailed soil maps are phases of soil series. The

name of a soil phase commonly indicates a feature that affects use or management. For example, Kidder loam, 4 to 6 percent slopes, eroded, is a phase of the Kidder series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes. A complex consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Casco-Rodman complex, 12 to 20 percent slopes, eroded, is an example.

This survey includes miscellaneous areas. Such areas have little or no soil material and support little or no vegetation. Pits, gravel, is an example.

Table 5 gives the acreage and proportionate extent of each map unit. Other tables (see Contents) give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils or miscellaneous areas.

Ashkum Series

Drainage class: Poorly drained
Permeability: Moderately slow
Landform: Moraines and till plains
Parent material: Silty colluvium and the underlying silty clay loam till
Slope range: 0 to 2 percent
Taxonomic classification: Fine, mixed, mesic Typic Endoaquolls

Typical Pedon for MLRA 95B

Typical pedon of Ashkum silty clay loam, 0 to 2 percent slopes, 189 feet south and 2,247 feet west of the northeast corner of sec. 19, T. 44 N., R. 7 E.

Ap—0 to 6 inches; black (10YR 2/1) silty clay loam, dark gray (10YR 4/1) dry; weak medium subangular blocky structure parting to moderate fine and medium granular; friable; common very fine roots; few distinct black (N 2.5/0) organic coatings on faces of peds; neutral; clear smooth boundary.

A—6 to 13 inches; black (10YR 2/1) silty clay, dark gray (10YR 4/1) dry; moderate medium subangular blocky structure parting to moderate medium granular; firm; common very fine roots; many distinct black (N 2.5/0) organic coatings on faces of peds; few fine and medium dark grayish brown (2.5Y 4/2) wormcasts; neutral; clear smooth boundary.

Btg1—13 to 18 inches; dark grayish brown (2.5Y 4/2) silty clay; weak fine and medium subangular blocky structure; friable; common very fine roots; common distinct dark gray (2.5Y 4/1) clay films on faces of peds; many distinct very dark gray (2.5Y 3/1) organic coatings on faces of peds; neutral; clear smooth boundary.

Btg2—18 to 22 inches; dark grayish brown (2.5Y 4/2) silty clay; moderate fine and medium subangular blocky structure; friable; common very fine roots; common distinct dark gray (2.5Y 4/1) clay films on faces of peds; few distinct very dark gray (2.5Y 3/1) organic coatings on faces of peds and in pores; common fine distinct light olive brown (2.5Y 5/6) masses of iron accumulation in the matrix; neutral; abrupt smooth boundary.

Btg3—22 to 30 inches; grayish brown (2.5Y 5/2) silty clay loam; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; common very fine roots; common distinct dark gray (2.5Y 4/1) clay films on faces of peds; very few distinct very dark gray (2.5Y 3/1) organic coatings in root channels and in pores; many fine and medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; neutral; abrupt smooth boundary.

2Btg4—30 to 36 inches; greenish gray (5GY 5/1) silty clay loam; weak medium prismatic structure parting to weak medium subangular blocky; firm; few very fine roots; very few distinct dark gray (2.5Y 4/1) clay films on faces of peds; very few distinct very dark gray (2.5Y 3/1) organic coatings in root channels and in pores; common fine strong brown (7.5YR 5/8) very weakly cemented iron oxide concretions throughout; many fine and medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; 3 percent gravel; slightly alkaline; clear smooth boundary.

2BCg—36 to 46 inches; greenish gray (5GY 5/1) silty clay loam; weak medium prismatic structure; firm; few very fine roots; very few distinct very dark gray (2.5Y 3/1) organic coatings in root channels and in pores; common fine white (10YR 8/1) soft masses of carbonates; common fine strong brown (7.5YR 5/8) very weakly cemented iron oxide concretions throughout; many fine and medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; 3 percent gravel; strongly effervescent; moderately alkaline; clear smooth boundary.

2Cg—46 to 60 inches; greenish gray (5GY 5/1) silty clay loam; massive; firm; few very fine roots; many medium and coarse prominent yellowish

brown (10YR 5/6) masses of iron accumulation in the matrix; 3 percent gravel; strongly effervescent; moderately alkaline.

MLRA Series Range in Characteristics

Thickness of the mollic epipedon: 10 to 24 inches
Thickness of silty material: 15 to 40 inches
Depth to carbonates: 22 to 48 inches
Thickness of the solum: 30 to 55 inches

Ap or A horizon:
Hue—10YR, 2.5Y, or N
Value—2 or 3
Chroma—0 or 1
Texture—silty clay loam, silt loam, or silty clay

Btg horizon:
Hue—2.5Y, 5Y, or N
Value—3 to 6
Chroma—0 to 2
Texture—silty clay loam or silty clay

2Btg horizon:
Hue—2.5Y, 5Y, 5GY, or N
Value—5 or 6
Chroma—0 to 2
Texture—silty clay loam or silty clay

2Cg horizon:
Hue—2.5Y, 5Y, 5GY, or N
Value—5 or 6
Chroma—1 or 2
Texture—silty clay loam

232A—Ashkum silty clay loam, 0 to 2 percent slopes

Setting

Landform: Moraines and till plains
Position on the landform: Footslopes and toeslopes
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Ashkum and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a thinner subsurface layer
- soils that contain less clay in the subsoil
- soils that are overlain by recent, light-colored deposition

Dissimilar soils:
- the somewhat poorly drained Beecher and Elliott soils in the higher positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Beecher Series

Drainage class: Somewhat poorly drained
Permeability: Slow
Landform: Moraines and till plains
Parent material: Thin mantle of silty material and the underlying silty clay loam till
Slope range: 2 to 4 percent
Taxonomic classification: Fine, illitic, mesic Udollic Epiaqualfs

Typical Pedon for MLRA 95B

Typical pedon of Beecher silt loam, 2 to 4 percent slopes, 500 feet north and 1,375 feet west of the southeast corner of sec. 20, T. 44 N., R. 7 E.

Ap—0 to 8 inches; very dark gray (10YR 3/1) silt loam, grayish brown (10YR 5/2) dry; weak medium subangular blocky structure parting to weak medium granular; friable; common very fine roots; neutral; clear smooth boundary.

2Bt1—8 to 13 inches; dark grayish brown (10YR 4/2) silty clay loam; moderate very fine and fine subangular blocky structure; friable; common very fine roots; many distinct dark grayish brown (10YR 4/2) clay films on faces of peds and in pores; common distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds and in pores; common fine dark brown (7.5YR 3/3) very weakly cemented iron and manganese oxide concretions throughout; 1 percent gravel; neutral; gradual smooth boundary.

2Bt2—13 to 20 inches; olive brown (2.5Y 4/3) silty clay loam; weak medium prismatic structure parting to moderate fine and medium subangular blocky; friable; common very fine roots; common distinct very dark grayish brown (2.5Y 3/2) organo-clay films on faces of peds and in pores; few distinct

dark grayish brown (2.5Y 4/2) clay films on faces of peds and in pores; common fine dark brown (7.5YR 3/3) very weakly cemented iron and manganese oxide concretions throughout; common fine distinct dark yellowish brown (10YR 4/4) masses of iron accumulation in the matrix; 1 percent gravel; neutral; gradual smooth boundary.

2Btg—20 to 28 inches; grayish brown (2.5Y 5/2) silty clay loam; moderate medium subangular blocky structure; firm; few very fine roots; common distinct dark grayish brown (2.5Y 4/2) clay films on faces of peds and in pores; few distinct very dark grayish brown (2.5Y 3/2) organo-clay films on faces of peds and in pores; common fine dark brown (7.5YR 3/3) very weakly cemented iron and manganese oxide concretions throughout; many fine and medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common fine faint gray (2.5Y 6/1) iron depletions in the matrix; 2 percent gravel; slightly effervescent; slightly alkaline; gradual smooth boundary.

2Bkg—28 to 35 inches; grayish brown (2.5Y 5/2) silty clay loam; weak medium and coarse subangular blocky structure; firm; few very fine roots; common fine light gray (10YR 7/2) carbonate threads; many fine and medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common fine faint gray (2.5Y 6/1) iron depletions in the matrix; 3 percent gravel; strongly effervescent; slightly alkaline; gradual smooth boundary.

2Cg—35 to 60 inches; 40 percent grayish brown (2.5Y 5/2), 40 percent yellowish brown (10YR 5/6), and 20 percent gray (2.5Y 6/1) silty clay loam; massive; firm; 3 percent gravel; strongly effervescent; moderately alkaline.

MLRA Series Range in Characteristics

Thickness of silty material: Less than 18 inches
Depth to carbonates: 20 to 40 inches
Thickness of the solum: 24 to 40 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—silt loam

E horizon (if it occurs):
Hue—10YR
Value—4 or 5
Chroma—2
Texture—silt loam

2Bt, 2Btg, 2Bk, 2Bkg, 2BC, or 2BCg horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 4
Texture—silty clay loam or silty clay

2C or 2Cg horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 6
Texture—silty clay loam

298B—Beecher silt loam, 2 to 4 percent slopes

Setting

Landform: Moraines and till plains
Position on the landform: Summits, backslopes, and footslopes
Slope range: 2 to 4 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Beecher and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a lighter colored surface layer
- soils that have a thicker surface layer
- soils that contain more sand in the upper part of the profile
- soils that are moderately eroded
- soils that have a seasonal high water table at a depth of more than 2.5 feet
- soils that have slopes of less than 2 percent

Dissimilar soils:
- the poorly drained Ashkum and very poorly drained Peotone soils in depressions and drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Bowes Series

Drainage class: Well drained
Permeability: Moderate in the upper part and very rapid in the lower part
Landform: Outwash plains and stream terraces
Parent material: Silty material and the underlying loamy and gravelly outwash
Slope range: 0 to 4 percent
Taxonomic classification: Fine-silty, mixed, mesic Mollic Hapludalfs

Typical Pedon for MLRA 95B

Typical pedon of Bowes silt loam, 0 to 2 percent slopes, 330 feet north and 330 feet west of the center of sec. 19, T. 42 N., R. 8 E.

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak very fine and fine granular structure; friable; moderately acid; abrupt smooth boundary.

E—9 to 13 inches; yellowish brown (10YR 5/4) silt loam; weak thick platy structure parting to weak fine granular; friable; slightly acid; clear smooth boundary.

Bt1—13 to 19 inches; brown (10YR 4/3) silty clay loam; moderate very fine and fine subangular blocky structure; firm; common distinct dark brown (10YR 3/3) clay films on faces of peds; slightly acid; clear smooth boundary.

Bt2—19 to 28 inches; yellowish brown (10YR 5/4) silty clay loam; weak coarse prismatic structure parting to moderate fine subangular blocky; firm; common distinct brown (10YR 4/3) clay films on faces of peds; slightly acid; gradual smooth boundary.

Bt3—28 to 36 inches; dark yellowish brown (10YR 4/4) silty clay loam; weak medium prismatic structure parting to moderate fine and medium subangular blocky; firm; common distinct brown (10YR 4/3) clay films on faces of peds; moderately acid; gradual smooth boundary.

Bt4—36 to 43 inches; yellowish brown (10YR 5/4) silty clay loam; weak medium prismatic structure parting to moderate fine and medium subangular blocky; firm; common distinct brown (10YR 4/3) clay films on faces of peds; 2 percent gravel; moderately acid; clear smooth boundary.

2Bt5—43 to 46 inches; brown (10YR 4/3) gravelly clay loam; moderate medium prismatic structure parting to moderate fine and medium subangular blocky; firm; few faint dark yellowish brown (10YR 3/4) clay films on faces of peds; 22 percent gravel and 5 percent cobbles; slightly alkaline; clear smooth boundary.

2BC—46 to 51 inches; dark brown (7.5YR 3/2) very gravelly sandy loam; weak medium subangular blocky structure; friable; 40 percent gravel and 10 percent cobbles; slightly alkaline; clear smooth boundary.

2C—51 to 61 inches; brown (7.5YR 4/4) very gravelly sand; single grain; loose; 45 percent gravel and 10 percent cobbles; strongly effervescent; moderately alkaline.

MLRA Series Range in Characteristics

Thickness of silty material: 28 to 60 inches
Depth to sandy and gravelly deposits: 40 to 60 inches
Depth to carbonates: 40 to 60 inches
Thickness of the solum: 40 to 65 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 to 3
Texture—silt loam

E horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 or 4
Texture—silt loam

Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 to 6
Texture—silty clay loam or silt loam

2Bt or 2BC horizon:
Hue—7.5YR or 10YR
Value—3 to 5
Chroma—2 to 6
Texture—the gravelly or very gravelly analogs of loam, sandy loam, sandy clay loam, or clay loam
Content of gravel—15 to 60 percent

2C horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 6
Texture—the gravelly, very gravelly, or extremely gravelly analogs of sand, loamy sand, coarse sand, or loamy coarse sand
Content of gravel—20 to 70 percent

792A—Bowes silt loam, 0 to 2 percent slopes

Setting

Landform: Outwash plains and stream terraces
Position on the landform: Summits
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Bowes and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a lighter colored surface layer
- soils that have a darker subsurface layer
- soils that contain sandy and gravelly deposits at a depth of less than 40 inches or more than 60 inches
- soils that contain more sand in the upper and middle parts of the subsoil

Dissimilar soils:
- the poorly drained Dunham soils in depressions and drainageways
- the somewhat poorly drained Grundelein and Millstream soils in the lower positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

792B—Bowes silt loam, 2 to 4 percent slopes

Setting

Landform: Outwash plains and stream terraces
Position on the landform: Summits, shoulders, and backslopes
Slope range: 2 to 4 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Bowes and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a lighter colored surface layer
- soils that have a darker subsurface layer
- soils that contain sandy and gravelly deposits at a depth of less than 40 inches or more than 60 inches
- soils that contain more sand in the upper and middle parts of the subsoil
- soils that have slopes of less than 2 percent

Dissimilar soils:
- the poorly drained Dunham soils in depressions and drainageways
- the somewhat poorly drained Grundelein and Millstream soils in the lower positions on the landform
- the loamy Dresden soils in positions on the landform similar to those of the Bowes soil

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Brenton Series

Drainage class: Somewhat poorly drained
Permeability: Moderate
Landform: Outwash plains, stream terraces, and till plains
Parent material: Silty material and the underlying loamy outwash
Slope range: 0 to 2 percent
Taxonomic classification: Fine-silty, mixed, mesic Aquic Argiudolls

Typical Pedon for MLRA 95B

Typical pedon of Brenton silt loam, 0 to 2 percent slopes, 2,490 feet south and 2,240 feet east of the northwest corner of sec. 18, T. 46 N., R. 7 E.

Ap—0 to 8 inches; black (10YR 2/1) silt loam, dark

gray (10YR 4/1) dry; weak fine granular structure; friable; common very fine roots; neutral; abrupt smooth boundary.

A—8 to 13 inches; black (10YR 2/1) silt loam, dark gray (10YR 4/1) dry; moderate fine and medium granular structure; friable; common very fine roots; neutral; clear smooth boundary.

Bt1—13 to 18 inches; dark grayish brown (10YR 4/2) silty clay loam; moderate fine subangular blocky structure; friable; common very fine roots; many distinct very dark gray (10YR 3/1) organic coatings on faces of peds; few distinct dark grayish brown (10YR 4/2) clay films on faces of peds; common fine very dark gray (10YR 3/1) iron and manganese oxide concretions throughout; common fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; neutral; clear smooth boundary.

Bt2—18 to 25 inches; light olive brown (2.5Y 5/3) silty clay loam; weak medium prismatic structure parting to moderate fine and medium subangular blocky; friable; common very fine roots; many distinct dark grayish brown (10YR 4/2) clay films on faces of peds; few distinct very dark gray (10YR 3/1) organic coatings in root channels and in pores; common fine very dark gray (10YR 3/1) iron and manganese oxide concretions throughout; common fine distinct yellowish brown (10YR 5/6) masses of iron accumulation and gray (10YR 6/1) iron depletions in the matrix; neutral; clear smooth boundary.

Bt3—25 to 35 inches; light olive brown (2.5Y 5/3) silty clay loam; moderate medium prismatic structure parting to moderate medium subangular blocky; friable; few very fine roots; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; common fine very dark gray (10YR 3/1) iron and manganese oxide concretions throughout; many fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common fine distinct gray (10YR 6/1) iron depletions in the matrix; neutral; clear smooth boundary.

2Btg—35 to 43 inches; grayish brown (2.5Y 5/2) loam; moderate medium prismatic structure; friable; few very fine roots; few distinct dark grayish brown (10YR 4/2) clay films on faces of peds; common fine and medium very dark gray (10YR 3/1) iron and manganese oxide concretions throughout; many fine and medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common fine distinct gray (10YR 6/1) iron depletions in the matrix; slightly alkaline; clear smooth boundary.

2Cg—43 to 60 inches; 60 percent grayish brown (2.5Y 5/2), 30 percent yellowish brown (10YR 5/6), and 10 percent gray (10YR 6/1), stratified loam and silt loam; massive; friable; few fine very dark gray (10YR 3/1) iron and manganese oxide concretions throughout; 1 percent gravel; slightly effervescent; moderately alkaline.

MLRA Series Range in Characteristics

Thickness of the mollic epipedon: 10 to 20 inches
Thickness of silty material: 24 to 40 inches
Depth to carbonates: Greater than 40 inches
Thickness of the solum: 40 to 55 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—silt loam

Bt horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 4
Texture—silty clay loam or silt loam

2Btg horizon:
Hue—7.5YR, 10YR, or 2.5Y
Value—4 to 6
Chroma—2 to 6
Texture—silt loam, sandy loam, loam, or clay loam

2Cg horizon:
Hue—7.5YR, 10YR, or 2.5Y
Value—4 to 6
Chroma—2 to 6
Texture—silt loam, sandy loam, loam, clay loam, or loamy sand

149A—Brenton silt loam, 0 to 2 percent slopes

Setting

Landform: Outwash plains, stream terraces, and till plains
Position on the landform: Footslopes
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Brenton and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a seasonal high water table at a depth of more than 2.5 feet
- soils that have no subsurface layer
- soils that contain carbonates at a depth of less than 40 inches
- soils that contain more sand in the upper and middle parts of the subsoil
- soils that contain sandy and gravelly deposits in the lower part of the profile
- soils that contain loamy outwash at a depth of more than 40 inches

Dissimilar soils:
- the poorly drained Pella soils in depressions and drainageways
- the well drained Harvard and Proctor soils in the higher positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- "Agronomy" section
- "Wildlife Habitat" section
- "Engineering" section
- "Soil Properties" section

Camden Series

Drainage class: Well drained
Permeability: Moderate
Landform: Outwash plains and stream terraces
Parent material: Silty material and the underlying loamy outwash
Slope range: 0 to 5 percent
Taxonomic classification: Fine-silty, mixed, mesic Typic Hapludalfs

Typical Pedon for MLRA 95B

Typical pedon of Camden silt loam, 0 to 2 percent slopes, 100 feet south and 1,700 feet west of the northeast corner of sec. 18, T. 45 N., R. 5 E.

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; weak fine subangular blocky structure parting to weak fine granular; friable; common very fine and fine roots; few distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; neutral; abrupt smooth boundary.

BE—9 to 14 inches; dark yellowish brown (10YR 4/4) silt loam; weak thick platy structure parting to weak fine subangular blocky; friable; common very fine and fine roots; few distinct brown (10YR 4/3) clay films and very dark grayish brown (10YR 3/2) organic coatings on faces of peds and in pores; few distinct light gray (10YR 7/2 dry) clay depletions on faces of peds; slightly acid; clear smooth boundary.

Bt1—14 to 21 inches; dark yellowish brown (10YR 4/4) silty clay loam; weak medium prismatic structure parting to moderate fine subangular blocky; friable; common very fine roots; few distinct brown (10YR 4/3) clay films and very dark grayish brown (10YR 3/2) organic coatings on faces of peds and in pores; few distinct light gray (10YR 7/2 dry) clay depletions on faces of peds; moderately acid; clear smooth boundary.

Bt2—21 to 29 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium prismatic structure parting to moderate fine and medium subangular blocky; friable; common very fine roots; common distinct brown (10YR 4/3) clay films on faces of peds and in pores; few distinct light gray (10YR 7/2 dry) clay depletions on faces of peds; moderately acid; clear wavy boundary.

2Bt3—29 to 37 inches; dark yellowish brown (10YR 4/4) clay loam; weak medium prismatic structure parting to moderate medium subangular blocky; firm; common very fine roots; common distinct brown (10YR 4/3) clay films on faces of peds and in pores; few distinct light gray (10YR 7/2 dry) clay depletions on faces of peds; 1 percent gravel; moderately acid; clear wavy boundary.

2Bt4—37 to 51 inches; dark yellowish brown (10YR 4/4) sandy clay loam; moderate medium subangular blocky structure; firm; few very fine roots; common distinct brown (10YR 4/3) clay films on faces of peds and in pores; few distinct light gray (10YR 7/2 dry) clay depletions on faces of peds; 1 percent gravel; slightly acid; clear wavy boundary.

2Bt5—51 to 60 inches; brown (7.5YR 4/4) sandy clay loam; weak medium subangular blocky structure; firm; few distinct dark brown (7.5YR 3/4) clay films on faces of peds and in pores; 3 percent gravel; neutral; clear smooth boundary.

2C1—60 to 71 inches; 45 percent brown (10YR 4/3), 45 percent dark yellowish brown (10YR 4/4), and 10 percent very dark grayish brown (10YR 3/2), stratified coarse sandy loam and loam; massive;

friable; 4 percent gravel; strongly effervescent; slightly alkaline; clear smooth boundary.

2C2—71 to 80 inches; brown (10YR 5/3) gravelly sandy loam; massive; friable; 25 percent gravel; strongly effervescent; slightly alkaline.

MLRA Series Range in Characteristics

Thickness of silty material: 24 to 40 inches
Depth to carbonates: Greater than 40 inches
Thickness of the solum: 40 to 62 inches

Ap or A horizon:
Hue—10YR
Value—3 or 4 (6 or 7 dry)
Chroma—2 or 3
Texture—silt loam

E horizon (if it occurs):
Hue—10YR
Value—4 to 6
Chroma—2 to 4
Texture—silt loam

Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 to 6
Texture—silty clay loam or silt loam

2Bt horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 6
Texture—silt loam, loam, sandy loam, clay loam, or sandy clay loam

2C horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 6
Texture—silt loam, loam, or sandy loam with strata of coarser textures

134A—Camden silt loam, 0 to 2 percent slopes

Setting

Landform: Outwash plains and stream terraces
Position on the landform: Summits
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Camden and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that contain less sand and more silt in the middle part of the subsoil
- soils that have a darker surface layer
- soils that contain sandy and gravelly deposits at a depth of less than 60 inches
- soils that have a seasonal high water table at a depth of less than 6 feet

Dissimilar soils:
- the somewhat poorly drained Millbrook soils in the lower positions on the landform
- the poorly drained Pella soils in drainageways
- the loamy Fox soils in positions on the landform similar to those of the Camden soil

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

134B—Camden silt loam, 2 to 5 percent slopes

Setting

Landform: Outwash plains and stream terraces
Position on the landform: Summits, shoulders, and backslopes
Slope range: 2 to 5 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Camden and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that contain less sand and more silt in the middle part of the subsoil
- soils that have a darker surface layer

- soils that contain sandy and gravelly deposits at a depth of less than 60 inches
- soils that have slopes of less than 2 percent

Dissimilar soils:

- the somewhat poorly drained Millbrook soils in the lower positions on the landform
- the poorly drained Pella soils in drainageways
- the loamy Fox soils in positions on the landform similar to those of the Camden soil

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Caprell Series

Drainage class: Well drained
Permeability: Moderate
Landform: Moraines and till plains
Parent material: Thin mantle of silty material and the underlying loamy till
Slope range: 2 to 20 percent
Taxonomic classification: Fine-loamy, mixed, mesic Typic Hapludalfs

Typical Pedon for MLRA 95B

Typical pedon of Caprell silt loam, 4 to 6 percent slopes, eroded, 2,593 feet south and 2,382 feet east of the northwest corner of sec. 8, T. 46 N., R. 5 E.

Ap—0 to 6 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak medium subangular blocky structure parting to weak fine granular; friable; common very fine roots; common distinct dark brown (10YR 3/3) organic coatings on faces of peds and in pores; few distinct light gray (10YR 7/2 dry) clay depletions on faces of peds; slightly acid; abrupt smooth boundary.

E—6 to 10 inches; 90 percent brown (10YR 4/3) and 10 percent dark yellowish brown (10YR 4/4) silt loam, pale brown (10YR 6/3) dry; weak medium subangular blocky structure parting to moderate thin platy; friable; common very fine roots; common distinct dark brown (10YR 3/3) organic coatings on faces of peds and in pores; few distinct light gray (10YR 7/2 dry) clay depletions on faces of peds and in pores; moderately acid; abrupt smooth boundary.

Bt1—10 to 16 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate fine and medium subangular blocky structure; friable; common very fine roots; few distinct brown (10YR 4/3) clay films and dark brown (10YR 3/3) organo-clay films on faces of peds; few distinct very dark grayish brown (10YR 3/2) organic coatings in root channels and in pores; slightly acid; clear wavy boundary.

2Bt2—16 to 22 inches; brown (7.5YR 4/4) clay loam; moderate fine and medium subangular blocky structure; friable; common very fine roots; few distinct brown (7.5YR 4/3) clay films on faces of peds; few distinct dark brown (7.5YR 3/2) organo-clay films on faces of peds and in pores; 2 percent gravel; slightly acid; clear smooth boundary.

2Bt3—22 to 33 inches; brown (7.5YR 4/4) clay loam; weak medium prismatic structure parting to moderate medium subangular blocky; friable; common very fine roots; few distinct brown (7.5YR 4/3) clay films on faces of peds; few distinct dark brown (7.5YR 3/2) organo-clay films on faces of peds and in pores; 4 percent gravel; neutral; clear smooth boundary.

2Bt4—33 to 38 inches; brown (7.5YR 4/4) loam; weak medium prismatic structure parting to moderate medium subangular blocky; friable; few very fine roots; few distinct brown (7.5YR 4/3) clay films on faces of peds; few distinct dark brown (7.5YR 3/2) organo-clay films on faces of peds and in pores; 6 percent gravel; slightly effervescent; slightly alkaline; clear smooth boundary.

2Bt5—38 to 47 inches; 55 percent dark yellowish brown (10YR 4/4) and 45 percent yellowish brown (10YR 5/4) loam; weak medium prismatic structure parting to weak medium and coarse subangular blocky; friable; few very fine roots; few distinct brown (10YR 4/3) clay films and very dark grayish brown (10YR 3/2) organo-clay films on faces of peds and in pores; 8 percent gravel; strongly effervescent; slightly alkaline; gradual smooth boundary.

2C—47 to 60 inches; yellowish brown (10YR 5/4) loam; massive; friable; few very fine roots; few distinct very dark grayish brown (10YR 3/2) linings in root channels and in pores; few fine distinct strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; 10 percent gravel; violently effervescent; moderately alkaline.

MLRA Series Range in Characteristics

Thickness of silty material: Less than 20 inches

Depth to carbonates: 20 to 48 inches
Thickness of the solum: 24 to 55 inches

Ap or A horizon:
Hue—7.5YR or 10YR
Value—2 to 4 (4 to 6 dry)
Chroma—1 to 3
Texture—silt loam, loam, or fine sandy loam

E horizon (if it occurs):
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—2 to 4
Texture—silt loam, loam, or sandy loam

Bt or 2Bt horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 6
Texture—clay loam, loam, or silty clay loam

2C horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 6
Texture—loam, sandy loam, or fine sandy loam
Content of gravel—less than 15 percent

624B—Caprell silt loam, 2 to 4 percent slopes

Setting

Landform: Moraines and till plains
Position on the landform: Summits, shoulders, and backslopes
Slope range: 2 to 4 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Caprell and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that are moderately eroded
- soils that have a darker and thicker surface layer
- soils that have a seasonal high water table at a depth of less than 6 feet
- soils that contain carbonates at a depth of less than 20 inches or more than 48 inches
- soils that contain less sand and more silt in the middle part of the subsoil

Dissimilar soils:
- the somewhat poorly drained Lismod and Torox soils in the lower positions on the landform
- the poorly drained Pella soils in drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

624C2—Caprell silt loam, 4 to 6 percent slopes, eroded

Setting

Landform: Moraines and till plains
Position on the landform: Summits, shoulders, and backslopes
Slope range: 4 to 6 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Caprell and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a seasonal high water table at a depth of less than 6 feet
- soils that contain carbonates at a depth of less than 20 inches or more than 48 inches
- soils that have slopes of less than 4 percent or more than 6 percent
- soils that are severely eroded
- soils that contain less sand and more silt in the middle part of the subsoil

Dissimilar soils:
- the somewhat poorly drained Lismod and Torox soils in the lower positions on the landform
- the poorly drained Pella soils in drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

624D2—Caprell silt loam, 6 to 12 percent slopes, eroded

Setting

Landform: Moraines and till plains
Position on the landform: Backslopes
Slope range: 6 to 12 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Caprell and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that contain carbonates at a depth of less than 20 inches or more than 48 inches
- soils that are severely eroded
- soils that have slopes of less than 6 percent or more than 12 percent

Dissimilar soils:
- the somewhat poorly drained Lismod and Torox soils in the lower positions on the landform
- the poorly drained Pella soils in drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

624E—Caprell silt loam, 12 to 20 percent slopes

Setting

Landform: Moraines and till plains
Position on the landform: Backslopes
Slope range: 12 to 20 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Caprell and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that are moderately eroded
- soils that have slopes of less than 12 percent or more than 20 percent
- soils that contain carbonates at a depth of less than 20 inches

Dissimilar soils:
- calcareous soils in positions on the landform similar to those of the Caprell soil
- the somewhat poorly drained Lismod and Torox soils in the lower positions on the landform
- the poorly drained Pella soils in drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Casco Series

Drainage class: Somewhat excessively drained
Permeability: Moderate in the upper part and very rapid in the lower part
Landform: Stream terraces, kames, outwash plains, and moraines
Parent material: Loamy drift over sandy and gravelly deposits
Slope range: 2 to 30 percent
Taxonomic classification: Fine-loamy over sandy or sandy-skeletal, mixed, mesic Typic Hapludalfs

Typical Pedon for MLRA 95B

Typical pedon of Casco loam, 2 to 6 percent slopes, 100 feet north and 2,440 feet west of the southeast corner of sec. 6, T. 14 N., R. 20 E.

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) loam, pale brown (10YR 6/3) dry; weak medium

subangular blocky structure parting to moderate medium granular; friable; common fine roots; slightly acid; abrupt smooth boundary.

Bt1—8 to 13 inches; brown (7.5YR 4/4) clay loam; moderate medium subangular blocky structure; firm; common fine roots; common distinct brown (7.5YR 4/3) clay films on faces of peds; slightly acid; clear smooth boundary.

Bt2—13 to 17 inches; brown (7.5YR 4/4) sandy clay loam; moderate medium subangular blocky structure; firm; common fine roots; common distinct dark brown (7.5YR 3/4) clay films on faces of peds; common distinct dark brown (7.5YR 3/2) organic coatings on faces of peds and on gravel near the lower boundary; about 9 percent gravel in the lower part; neutral; abrupt wavy boundary.

2C—17 to 60 inches; brown (10YR 5/3), stratified gravelly coarse sand, very gravelly coarse sand, and extremely gravelly coarse sand; single grain; loose; about 60 percent gravel (as an average); strongly effervescent; moderately alkaline.

MLRA Series Range in Characteristics

Depth to sandy and gravelly deposits: 10 to 20 inches
Depth to carbonates: 10 to 20 inches
Thickness of the solum: 10 to 20 inches

Ap or A horizon:
Hue—7.5YR or 10YR
Value—3 or 4
Chroma—2 or 3
Texture—loam or clay loam

Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 or 4
Texture—clay loam, sandy clay loam, loam, or the gravelly analogs of these textures
Content of gravel—0 to 35 percent

C horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 or 4
Texture—the gravelly, very gravelly, or extremely gravelly analogs of sand or coarse sand
Content of gravel—15 to 70 percent

323B—Casco loam, 2 to 4 percent slopes

Setting

Landform: Stream terraces, kames, outwash plains, and moraines
Position on the landform: Summits, shoulders, and backslopes
Slope range: 2 to 4 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Casco and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that contain sandy and gravelly deposits at a depth of more than 20 inches
- soils that have slopes of more than 4 percent
- soils that contain loamy till in the lower part of the profile
- soils that have a darker surface layer

Dissimilar soils:
- the somewhat poorly drained Kane soils in the lower positions on the landform
- the excessively drained Rodman soils in the slightly higher positions on the landform
- the poorly drained Will soils in depressions and drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

323C2—Casco loam, 4 to 6 percent slopes, eroded

Setting

Landform: Stream terraces, kames, outwash plains, and moraines
Position on the landform: Backslopes and shoulders
Slope range: 4 to 6 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available

in the “Soil Properties” section in Part II of this publication.

Composition

Casco and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that are severely eroded
- soils that contain sandy and gravelly deposits at a depth of more than 20 inches
- soils that have slopes of less than 4 percent or more than 6 percent
- soils that have a darker surface layer
- soils that contain loamy till in the lower part of the profile

Dissimilar soils:
- the somewhat poorly drained Kane soils in the lower positions on the landform
- the excessively drained Rodman soils in positions on the landform similar to those of the Casco soil
- the poorly drained Will soils in depressions and drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

323C3—Casco clay loam, 4 to 6 percent slopes, severely eroded

Setting

Landform: Stream terraces, kames, outwash plains, and moraines
Position on the landform: Backslopes and shoulders
Slope range: 4 to 6 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Casco and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that are moderately eroded
- soils that contain sandy and gravelly deposits at a depth of more than 20 inches
- soils that have slopes of less than 4 percent or more than 6 percent
- soils that contain loamy till in the lower part of the profile

Dissimilar soils:
- the somewhat poorly drained Kane soils in the lower positions on the landform
- the excessively drained Rodman soils in positions on the landform similar to those of the Casco soil
- the poorly drained Will soils in depressions and drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

323D2—Casco loam, 6 to 12 percent slopes, eroded

Setting

Landform: Stream terraces, kames, outwash plains, and moraines
Position on the landform: Backslopes
Slope range: 6 to 12 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Casco and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that are severely eroded
- soils that contain sandy and gravelly deposits at a depth of more than 20 inches
- soils that have slopes of less than 6 percent or more than 12 percent

- soils that contain loamy till in the lower part of the profile

Dissimilar soils:
- the somewhat poorly drained Kane soils in the lower positions on the landform
- the excessively drained Rodman soils in positions on the landform similar to those of the Casco soil
- the poorly drained Will soils in depressions and drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- "Agronomy" section
- "Forestland" section
- "Wildlife Habitat" section
- "Engineering" section
- "Soil Properties" section

323D3—Casco clay loam, 6 to 12 percent slopes, severely eroded

Setting

Landform: Stream terraces, kames, outwash plains, and moraines
Position on the landform: Backslopes
Slope range: 6 to 12 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the "Soil Properties" section in Part II of this publication.

Composition

Casco and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that are moderately eroded
- soils that contain sandy and gravelly deposits at a depth of more than 20 inches
- soils that have slopes of less than 6 percent or more than 12 percent
- soils that contain loamy till in the lower part of the profile

Dissimilar soils:
- the somewhat poorly drained Kane soils in the lower positions on the landform
- the excessively drained Rodman soils in positions on the landform similar to those of the Casco soil
- the poorly drained Will in depressions and drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- "Agronomy" section
- "Forestland" section
- "Wildlife Habitat" section
- "Engineering" section
- "Soil Properties" section

969E2—Casco-Rodman complex, 12 to 20 percent slopes, eroded

Setting

Landform: Stream terraces, kames, outwash plains, and moraines
Position on the landform: Backslopes
Slope range: 12 to 20 percent

Typical soil series descriptions with range in characteristics are included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the "Soil Properties" section in Part II of this publication.

Composition

Casco and similar soils: 50 percent
Rodman and similar soils: 40 percent
Dissimilar soils: 10 percent

Similar soils:
- soils that are slightly eroded
- soils that contain sandy and gravelly deposits at a depth of more than 20 inches
- soils that contain carbonates at or near the surface
- soils that have slopes of less than 12 percent or more than 20 percent
- soils that contain loamy till in the lower part of the profile

Dissimilar soils:
- the somewhat poorly drained Kane soils in the lower positions on the landform
- the poorly drained Will soils in depressions and drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

969F—Casco-Rodman complex, 20 to 30 percent slopes

Setting

Landform: Stream terraces, kames, outwash plains, and moraines
Position on the landform: Backslopes
Slope range: 20 to 30 percent

Typical soil series descriptions with range in characteristics are included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Casco and similar soils: 50 percent
Rodman and similar soils: 40 percent
Dissimilar soils: 10 percent

Similar soils:
- soils that contain carbonates at or near the surface
- soils that contain sandy and gravelly deposits at a depth of more than 20 inches
- soils that have slopes of less than 20 percent or more than 30 percent
- soils that are moderately eroded
- soils that contain loamy till in the lower part of the profile

Dissimilar soils:
- the somewhat poorly drained Kane soils in the lower positions on the landform
- the poorly drained Will soils in depressions

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Comfrey Series

Drainage class: Poorly drained
Permeability: Moderate
Landform: Flood plains
Parent material: Loamy alluvium
Slope range: 0 to 2 percent
Taxonomic classification: Fine-loamy, mixed, mesic Cumulic Endoaquolls

Typical Pedon for MLRA 95B

Typical pedon of Comfrey loam, 0 to 2 percent slopes, occasionally flooded, 570 feet north and 1,400 feet west of the center of sec. 25, T. 43 N., R. 2 E.

Ap—0 to 7 inches; black (10YR 2/1) loam, dark gray (10YR 4/1) dry; weak fine and medium granular structure; friable; common very fine roots; neutral; clear smooth boundary.

A1—7 to 15 inches; black (10YR 2/1) loam, dark gray (10YR 4/1) dry; weak fine and medium granular structure; friable; common very fine roots; many distinct black (N 2.5/0) organic coatings on faces of peds; common fine brown (7.5YR 4/4) very weakly cemented iron oxide concretions throughout; neutral; clear smooth boundary.

A2—15 to 26 inches; very dark gray (10YR 3/1) loam, gray (10YR 5/1) dry; weak fine and medium granular structure; friable; common very fine roots; many distinct black (N 2.5/0) organic coatings on faces of peds; common fine brown (7.5YR 4/4) very weakly cemented iron oxide concretions throughout; neutral; clear smooth boundary.

Bg—26 to 37 inches; gray (2.5Y 5/1) silty clay loam; weak medium prismatic structure parting to weak medium subangular blocky; friable; common very fine roots; few distinct very dark gray (2.5Y 3/1) organic coatings on faces of peds and in pores; many fine and medium yellowish brown (10YR 5/6) very weakly cemented iron oxide concretions throughout; common fine distinct gray (10YR 6/1) iron depletions in the matrix; neutral; gradual smooth boundary.

Cg1—37 to 57 inches; gray (5Y 5/1), stratified clay loam and loam; massive; friable; few very fine roots; many fine and medium yellowish brown (10YR 5/6) very weakly cemented iron oxide concretions throughout; common fine prominent gray (10YR 6/1) iron depletions in the matrix; neutral; gradual smooth boundary.

Cg2—57 to 63 inches; 40 percent gray (5Y 5/1), 30 percent yellowish brown (10YR 5/6), and 30 percent dark gray (2.5Y 4/1), stratified loam and sandy loam; massive; friable; 12 percent gravel; neutral.

MLRA Series Range in Characteristics

Thickness of the mollic epipedon: 24 to 36 inches
Depth to carbonates: Greater than 18 inches

Thickness of the solum: 24 to 50 inches

Ap or A horizon:
Hue—10YR, 2.5Y, or N
Value—2 or 3
Chroma—0 or 1
Texture—loam, silt loam, clay loam, or silty clay loam

Bg horizon:
Hue—10YR, 2.5Y, 5Y, or N
Value—3 to 5
Chroma—0 to 2
Texture—loam, clay loam, silty clay loam, or silt loam

Cg horizon:
Hue—2.5Y or 5Y
Value—4 to 6
Chroma—1 or 2
Texture—loam, silt loam, or sandy loam
Content of gravel—0 to 15 percent

1776A—Comfrey loam, 0 to 2 percent slopes, undrained, occasionally flooded

Setting

Landform: Flood plains
Position on the landform: Footslopes and toeslopes
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Comfrey and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a thinner subsurface layer
- soils that contain less sand and more silt in the upper two-thirds of the profile
- soils that contain more gravel in the lower part of the profile
- soils that contain carbonates at or near the surface

Dissimilar soils:
- the somewhat poorly drained Grundelein and Kane soils on the higher adjacent landforms
- the very poorly drained Houghton and Palms soils in depressions

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

8776A—Comfrey loam, 0 to 2 percent slopes, occasionally flooded

Setting

Landform: Flood plains
Position on the landform: Footslopes and toeslopes
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Comfrey and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a thinner subsurface layer
- soils that contain less sand and more silt in the upper two-thirds of the profile
- soils that contain more gravel in the lower part of the profile
- soils that contain carbonates at or near the surface

Dissimilar soils:
- the somewhat poorly drained Grundelein and Kane soils on the higher adjacent landforms
- the very poorly drained Houghton and Palms soils in depressions

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Dakota Series

Drainage class: Well drained
Permeability: Moderate in the upper part and rapid in the lower part
Landform: Outwash plains and stream terraces
Parent material: Loamy and sandy outwash
Slope range: 0 to 4 percent
Taxonomic classification: Fine-loamy over sandy or sandy-skeletal, mixed, mesic Typic Argiudolls

Typical Pedon for MLRA 95B

Typical pedon of Dakota loam, 0 to 2 percent slopes, 1,600 feet north and 2,000 feet west of the southeast corner of sec. 21, T. 44 N., R. 5 E.

Ap—0 to 11 inches; very dark brown (10YR 2/2) loam, dark grayish brown (10YR 4/2) dry; moderate medium subangular blocky structure parting to weak fine granular; friable; common very fine roots; common distinct black (10YR 2/1) organic coatings on faces of peds; slightly acid; abrupt smooth boundary.

Bt1—11 to 19 inches; dark yellowish brown (10YR 4/4) clay loam; moderate fine and medium subangular blocky structure; friable; common very fine roots; common distinct brown (10YR 4/3) clay films on faces of peds; few distinct very dark brown (10YR 2/2) and very dark grayish brown (10YR 3/2) organic coatings on faces of peds; 1 percent gravel; neutral; clear smooth boundary.

Bt2—19 to 30 inches; dark yellowish brown (10YR 4/4) clay loam; moderate medium subangular blocky structure; friable; common very fine roots; common distinct brown (10YR 4/3) clay films on faces of peds; 3 percent gravel; moderately acid; clear smooth boundary.

2Bt3—30 to 34 inches; dark yellowish brown (10YR 4/4) sandy loam; weak medium subangular blocky structure; very friable; common very fine roots; few distinct brown (10YR 4/3) clay films on faces of peds; 1 percent gravel; moderately acid; clear smooth boundary.

2C1—34 to 46 inches; dark yellowish brown (10YR 4/6) loamy sand; single grain; loose; few very fine roots; 1 percent gravel; moderately acid; gradual smooth boundary.

2C2—46 to 60 inches; yellowish brown (10YR 5/6) sand; single grain; loose; 3 percent gravel; slightly effervescent; slightly alkaline.

MLRA Series Range in Characteristics

Thickness of the mollic epipedon: 10 to 18 inches
Depth to sandy outwash: 20 to 40 inches
Depth to carbonates: Greater than 45 inches
Thickness of the solum: 24 to 45 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 to 3
Texture—loam or silt loam

Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 or 4
Texture—clay loam or loam

2Bt or 2BC horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 or 4
Texture—sandy loam or loamy sand

2C horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 6
Texture—loamy sand, sand, loamy coarse sand, or coarse sand
Content of gravel—0 to 15 percent

379A—Dakota loam, 0 to 2 percent slopes

Setting

Landform: Outwash plains and stream terraces
Position on the landform: Summits
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the "Soil Properties" section in Part II of this publication.

Composition

Dakota and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a thinner surface layer
- soils that contain carbonates at a depth of less than 45 inches
- soils that have a seasonal high water table at a depth of less than 6 feet
- soils that contain sandy outwash at a depth of more than 40 inches

Dissimilar soils:
- the somewhat poorly drained Lahoguess soils in the lower positions on the landform
- the poorly drained Selmass soils in depressions and drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

379B—Dakota loam, 2 to 4 percent slopes

Setting

Landform: Outwash plains and stream terraces
Position on the landform: Summits, shoulders, and backslopes
Slope range: 2 to 4 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Dakota and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a thinner surface layer
- soils that contain carbonates at a depth of less than 45 inches
- soils that have slopes of less than 2 percent
- soils that contain sandy outwash at a depth of more than 40 inches

Dissimilar soils:
- the somewhat poorly drained Lahoguess soils in the lower positions on the landform
- the poorly drained Selmass soils in depressions and drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Danabrook Series

Drainage class: Moderately well drained
Permeability: Moderate in the upper part and moderately slow in the lower part
Landform: Moraines and till plains
Parent material: Silty material and the underlying loamy till
Slope range: 0 to 5 percent
Taxonomic classification: Fine-silty, mixed, mesic Oxyaquic Argiudolls

Typical Pedon for MLRA 95B

Typical pedon of Danabrook silt loam, 2 to 5 percent slopes, 176 feet south and 2,234 feet west of the northeast corner of sec. 5, T. 42 N., R. 5 E.

Ap—0 to 8 inches; very dark gray (10YR 3/1) silt loam, gray (10YR 5/1) dry; weak very fine and fine granular structure; friable; common very fine roots; neutral; clear smooth boundary.

A—8 to 13 inches; very dark gray (10YR 3/1) silt loam, gray (10YR 5/1) dry; moderate fine granular structure; friable; common very fine roots; neutral; clear smooth boundary.

Bt1—13 to 21 inches; brown (10YR 4/3) silty clay loam; moderate very fine and fine subangular blocky structure; friable; common very fine roots; few distinct dark brown (10YR 3/3) clay films and very dark grayish brown (10YR 3/2) organic coatings on faces of peds and in pores; neutral; clear smooth boundary.

Bt2—21 to 26 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate fine and medium subangular blocky structure; friable; few very fine roots; common distinct brown (10YR 4/3) clay films on faces of peds and in pores; common fine dark brown (7.5YR 3/3) very weakly cemented iron and manganese oxide concretions throughout; common fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; neutral; clear wavy boundary.

Bt3—26 to 33 inches; brown (10YR 5/3) silty clay loam; weak medium prismatic structure parting to moderate medium subangular blocky; friable; few very fine roots; many distinct brown (10YR 4/3) clay films on faces of peds and in pores; common fine dark brown (7.5YR 3/3) very weakly cemented iron and manganese oxide concretions throughout; many fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in the

matrix; common fine faint grayish brown (10YR 5/2) iron depletions in the matrix; neutral; clear wavy boundary.

2Bt4—33 to 42 inches; brown (7.5YR 5/4) clay loam; weak medium prismatic structure parting to moderate medium subangular blocky; friable; few very fine roots; common distinct brown (10YR 4/3) clay films on faces of peds and in pores; common fine very dark gray (7.5YR 3/1) very weakly cemented iron and manganese oxide concretions throughout; common fine prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few fine prominent light brownish gray (10YR 6/2) iron depletions in the matrix; 6 percent gravel; slightly alkaline; clear wavy boundary.

2BC—42 to 50 inches; brown (7.5YR 5/4) loam; weak medium prismatic structure parting to weak medium subangular blocky; friable; common fine prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common fine prominent light brownish gray (10YR 6/2) iron depletions in the matrix; 8 percent gravel; strongly effervescent; slightly alkaline; gradual wavy boundary.

2C—50 to 60 inches; brown (7.5YR 5/4) loam; massive; friable; many fine prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common fine prominent light brownish gray (10YR 6/2) iron depletions in the matrix; 10 percent gravel; strongly effervescent; slightly alkaline.

MLRA Series Range in Characteristics

Thickness of the mollic epipedon: 10 to 20 inches
Thickness of silty material: 22 to 40 inches
Depth to carbonates: 30 to 50 inches
Thickness of the solum: 36 to 60 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 to 3
Texture—silt loam

Bt horizon:
Hue—10YR
Value—4 to 6
Chroma—3 or 4
Texture—silty clay loam or silt loam

2Bt or 2BC horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 6
Texture—clay loam, loam, or sandy clay loam
Content of gravel—2 to 10 percent

2C horizon:
Hue—7.5YR
Value—4 to 6
Chroma—3 to 6
Texture—loam or sandy loam
Content of gravel—5 to 15 percent

512A—Danabrook silt loam, 0 to 2 percent slopes

Setting

Landform: Moraines and till plains
Position on the landform: Summits
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Danabrook and similar soils: 90 percent
Dissimilar soils: 10 percent

Similar soils:
- soils that have slopes of more than 2 percent
- soils that have no subsurface layer
- soils that have a seasonal high water table at a depth of less than 2 feet or more than 3.5 feet
- soils that contain more sand in the upper and middle parts of the subsoil

Dissimilar soils:
- the poorly drained Drummer soils in drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

512B—Danabrook silt loam, 2 to 5 percent slopes

Setting

Landform: Moraines and till plains
Position on the landform: Summits, shoulders, and backslopes

Slope range: 2 to 5 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Danabrook and similar soils: 90 percent
Dissimilar soils: 10 percent

Similar soils:
- soils that have slopes of less than 2 percent
- soils that have no subsurface layer
- soils that have a seasonal high water table at a depth of less than 2 feet or more than 3.5 feet
- soils that contain more sand in the upper and middle parts of the subsoil

Dissimilar soils:
- the poorly drained Drummer soils in drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Dickinson Series

Drainage class: Well drained
Permeability: Moderately rapid in the upper part and rapid in the lower part
Landform: Outwash plains and stream terraces
Parent material: Loamy and sandy outwash
Slope range: 0 to 5 percent
Taxonomic classification: Coarse-loamy, mixed, mesic Typic Hapludolls
Taxadjunct features: Dickinson sandy loam, 2 to 5 percent slopes, eroded, has a mollic epipedon that is less than 10 inches thick. This soil is classified as a coarse-loamy, mixed, mesic Umbric Dystrochrept.

Typical Pedon for MLRA 95B

Typical pedon of Dickinson sandy loam, 0 to 2 percent slopes, 1,048 feet south and 214 feet west of the northeast corner of sec. 31, T. 44 N., R. 5 E.

Ap—0 to 8 inches; very dark brown (10YR 2/2) sandy loam, grayish brown (10YR 5/2) dry; weak fine and medium subangular blocky structure parting to weak medium granular; friable; common very fine roots; strongly acid; clear smooth boundary.

A—8 to 14 inches; very dark brown (10YR 2/2) sandy loam, grayish brown (10YR 5/2) dry; weak medium subangular blocky structure parting to moderate medium granular; friable; common very fine roots; moderately acid; clear smooth boundary.

AB—14 to 18 inches; very dark grayish brown (10YR 3/2) sandy loam, brown (10YR 5/3) dry; weak fine subangular blocky structure parting to weak fine granular; friable; common very fine roots; moderately acid; clear smooth boundary.

Bw—18 to 26 inches; brown (10YR 4/3) sandy loam; moderate fine and medium subangular blocky structure; friable; common very fine roots; many distinct dark brown (10YR 3/3) organic coatings on faces of peds; 1 percent gravel; moderately acid; clear smooth boundary.

BC—26 to 38 inches; dark yellowish brown (10YR 4/6) loamy sand; weak medium subangular blocky structure; very friable; common very fine roots; slightly acid; gradual smooth boundary.

C—38 to 60 inches; 90 percent dark yellowish brown (10YR 4/6) and 10 percent dark yellowish brown (10YR 4/4), stratified sand and loamy sand; single grain; loose; 1 percent gravel; slightly acid.

MLRA Series Range in Characteristics

Thickness of the mollic epipedon: 12 to 24 inches
Thickness of the solum: 24 to 50 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 to 3
Texture—sandy loam or loam

Bw horizon:
Hue—10YR
Value—4 or 5
Chroma—3 or 4
Texture—sandy loam or fine sandy loam

C horizon:
Hue—10YR
Value—4 or 5
Chroma—3 to 6
Texture—loamy sand, sand, loamy fine sand, or fine sand

87A—Dickinson sandy loam, 0 to 2 percent slopes

Setting

Landform: Outwash plains and stream terraces
Position on the landform: Summits
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the "Soil Properties" section in Part II of this publication.

Composition

Dickinson and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have no subsurface layer
- soils that contain more clay in the subsoil
- soils that are darker in the upper part of the subsoil
- soils that have a seasonal high water table at a depth of less than 6 feet
- soils that contain carbonates at a depth of less than 60 inches

Dissimilar soils:
- the somewhat poorly drained Hoopeston soils in the lower positions on the landform
- sandy soils in the slightly higher positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- "Agronomy" section
- "Wildlife Habitat" section
- "Engineering" section
- "Soil Properties" section

87B—Dickinson sandy loam, 2 to 5 percent slopes

Setting

Landform: Outwash plains and stream terraces
Position on the landform: Summits, shoulders, and backslopes
Slope range: 2 to 5 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the "Soil Properties" section in Part II of this publication.

Composition

Dickinson and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have no subsurface layers
- soils that contain more clay in the subsoil
- soils that have slopes of less than 2 percent
- soils that contain carbonates at a depth of less than 60 inches

Dissimilar soils:
- the somewhat poorly drained Hoopeston soils in the lower positions on the landform
- sandy soils in the slightly higher positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- "Agronomy" section
- "Wildlife Habitat" section
- "Engineering" section
- "Soil Properties" section

87B2—Dickinson sandy loam, 2 to 5 percent slopes, eroded

Setting

Landform: Outwash plains and moraines
Position on the landform: Shoulders and backslopes
Slope range: 2 to 5 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the "Soil Properties" section in Part II of this publication.

Composition

Dickinson and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that contain more clay in the subsoil
- soils that have a lighter colored surface layer
- soils that have slopes of more than 5 percent

• soils that contain carbonates at a depth of less than 60 inches

Dissimilar soils:
• the somewhat poorly drained Hoopeston soils in the lower positions on the landform
• sandy soils in the slightly higher positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Dresden Series

Drainage class: Well drained
Permeability: Moderate in the upper part and very rapid in the lower part
Landform: Outwash plains and stream terraces
Parent material: Loamy drift over sandy and gravelly deposits
Slope range: 0 to 4 percent
Taxonomic classification: Fine-loamy over sandy or sandy-skeletal, mixed, mesic Mollic Hapludalfs

Typical Pedon for MLRA 95B

Typical pedon of Dresden silt loam, 2 to 4 percent slopes, 720 feet south and 1,340 feet west of the center of sec. 21, T. 41 N., R. 8 E.

Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak very fine granular structure; friable; common very fine roots; slightly acid; abrupt smooth boundary.
BA—7 to 11 inches; brown (10YR 4/3) silt loam; weak very fine subangular blocky structure; friable; common very fine roots; few distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; neutral; clear smooth boundary.
Bt1—11 to 19 inches; brown (10YR 4/3) silty clay loam; moderate fine subangular blocky structure; friable; few very fine roots; common distinct dark brown (10YR 3/3) clay films on faces of peds; slightly acid; clear smooth boundary.
2Bt2—19 to 27 inches; dark yellowish brown (10YR 4/4) clay loam; moderate fine and medium subangular blocky structure; friable; few very fine roots; common distinct brown (10YR 4/3) clay films on faces of peds; 5 percent gravel; slightly acid; clear smooth boundary.
2Bt3—27 to 32 inches; dark yellowish brown (10YR 4/4) sandy clay loam; weak coarse subangular blocky structure; friable; few very fine roots; common distinct brown (7.5YR 4/3) and dark brown (7.5YR 3/3) clay films on faces of peds; 13 percent gravel; neutral; abrupt smooth boundary.
3C—32 to 60 inches; yellowish brown (10YR 5/4) gravelly sand; single grain; loose; 34 percent gravel; strongly effervescent; moderately alkaline.

MLRA Series Range in Characteristics

Depth to sandy and gravelly deposits: 24 to 40 inches
Depth to carbonates: 24 to 40 inches
Thickness of the solum: 24 to 40 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—2 or 3
Texture—silt loam or loam

Bt or 2Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 or 4
Texture—silty clay loam, clay loam, loam, or sandy clay loam

3C horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 to 6
Texture—the gravelly, very gravelly, or extremely gravelly analogs of sand, loamy sand, coarse sand, or loamy coarse sand
Content of gravel—20 to 70 percent

325A—Dresden silt loam, 0 to 2 percent slopes

Setting

Landform: Outwash plains and stream terraces
Position on the landform: Summits
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Dresden and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a lighter colored surface layer
- soils that have a thicker surface layer
- soils that contain less sand and more silt in the upper one-half of the profile
- soils that contain sandy and gravelly deposits at a depth of more than 40 inches or less than 24 inches
- soils that contain loamy till in the lower part of the profile

Dissimilar soils:
- the somewhat poorly drained Kane soils in the lower positions on the landform
- the poorly drained Will soils in depressions and drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

325B—Dresden silt loam, 2 to 4 percent slopes

Setting

Landform: Outwash plains and stream terraces
Position on the landform: Summits, shoulders, and backslopes
Slope range: 2 to 4 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Dresden and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a lighter colored surface layer
- soils that have a thicker surface layer
- soils that contain less sand and more silt in the upper one-half of the profile
- soils that contain sandy and gravelly deposits at a depth of more than 40 inches or less than 24 inches
- soils that contain loamy till in the lower part of the profile

Dissimilar soils:
- the somewhat poorly drained Kane soils in the lower positions on the landform
- the poorly drained Will soils in depressions and drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Drummer Series

Drainage class: Poorly drained
Permeability: Moderate
Landform: Outwash plains and till plains
Parent material: Silty material and the underlying loamy outwash
Slope range: 0 to 2 percent
Taxonomic classification: Fine-silty, mixed, mesic Typic Endoaquolls

Typical Pedon for MLRA 95B

Typical pedon of Drummer silty clay loam, 0 to 2 percent slopes, 40 feet south and 90 feet west of the northeast corner of sec. 34, T. 43 N., R. 2 E.

Ap—0 to 8 inches; black (N 2.5/0) silty clay loam, very dark gray (10YR 3/1) dry; moderate fine subangular blocky structure parting to weak fine granular; friable; common very fine roots; neutral; abrupt smooth boundary.

A—8 to 12 inches; very dark gray (N 3/0) silty clay loam, dark gray (10YR 4/1) dry; weak fine subangular blocky structure parting to weak medium granular; friable; common very fine roots; neutral; abrupt smooth boundary.

AB—12 to 19 inches; very dark gray (5Y 3/1) silty clay loam, dark grayish brown (2.5Y 4/2) dry; moderate very fine subangular blocky structure; firm; common very fine roots; neutral; abrupt smooth boundary.

Btg—19 to 27 inches; olive gray (5Y 5/2) silty clay loam; moderate very fine subangular blocky structure; firm; common very fine roots; common distinct dark gray (5Y 4/1) clay films and very dark gray (5Y 3/1) organic coatings on faces of peds; few fine distinct light yellowish brown (2.5Y 6/4) masses of iron accumulation in the matrix; neutral; clear smooth boundary.

Bg1—27 to 36 inches; olive gray (5Y 5/2) silty clay loam; moderate fine subangular blocky structure; firm; common medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; neutral; clear smooth boundary.

Bg2—36 to 43 inches; olive gray (5Y 5/2) silt loam; moderate medium and coarse subangular blocky structure; friable; many medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; 2 percent gravel; neutral; clear wavy boundary.

2BCg—43 to 48 inches; olive gray (5Y 5/2) loam; weak coarse prismatic structure; friable; many fine prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; 8 percent gravel; neutral; clear wavy boundary.

2Cg—48 to 60 inches; 60 percent olive gray (5Y 5/2) and 40 percent yellowish brown (10YR 5/4) sandy loam; massive; friable; 8 percent gravel; neutral.

MLRA Series Range in Characteristics

Thickness of the mollic epipedon: 10 to 20 inches
Thickness of silty material: 40 to 60 inches
Depth to carbonates: 40 to 60 inches
Thickness of the solum: 42 to 60 inches

Ap or A horizon:
Hue—10YR, 2.5Y, 5Y, or N
Value—2 or 3
Chroma—0 to 2
Texture—silty clay loam or silt loam

Bg or Btg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 or 5
Chroma—1 or 2
Texture—silty clay loam or silt loam

2BC or 2BCg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 or 2
Texture—loam, silt loam, sandy loam, sandy clay loam, or clay loam

2Cg or 2C horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 to 6
Texture—loam, silt loam, sandy loam, or loamy sand

152A—Drummer silty clay loam, 0 to 2 percent slopes

Setting

Landform: Outwash plains and till plains
Position on the landform: Footslopes and toeslopes
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Drummer and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have no subsurface layers
- soils that contain more sand in the middle part of the subsoil
- soils that contain carbonates at a depth of less than 40 inches
- soils that contain sandy and gravelly deposits in the lower part of the profile

Dissimilar soils:
- the somewhat poorly drained Brenton and Lisbon soils in the slightly higher positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Dunham Series

Drainage class: Poorly drained
Permeability: Moderate in the upper part and very rapid in the lower part
Landform: Outwash plains and stream terraces
Parent material: Silty material and the underlying loamy outwash over sandy and gravelly deposits
Slope range: 0 to 2 percent

Taxonomic classification: Fine-silty, mixed, mesic Typic Endoaquolls

Typical Pedon for MLRA 95B

Typical pedon of Dunham silty clay loam, 0 to 2 percent slopes, 939 feet south and 81 feet west of the center of sec. 15, T. 45 N., R. 5 E.

Ap—0 to 6 inches; black (N 2.5/0) silty clay loam, dark gray (10YR 4/1) dry; weak fine subangular blocky structure parting to moderate fine and medium granular; friable; common very fine roots; neutral; clear smooth boundary.

A—6 to 12 inches; black (N 2.5/0) silty clay loam, dark grayish brown (10YR 4/2) dry; weak medium subangular blocky structure parting to moderate fine and medium granular; friable; common very fine roots; moderately acid; abrupt smooth boundary.

BAg—12 to 15 inches; dark grayish brown (2.5Y 4/2) silty clay loam; weak fine and medium subangular blocky structure; friable; common very fine roots; common distinct very dark gray (2.5Y 3/1) organic coatings on faces of peds and in pores; few fine strong brown (7.5YR 5/6) very weakly cemented iron oxide concretions throughout; common fine distinct olive brown (2.5Y 4/4) masses of iron accumulation in the matrix; moderately acid; clear smooth boundary.

Btg1—15 to 24 inches; grayish brown (2.5Y 5/2) silty clay loam; weak medium prismatic structure parting to moderate fine and medium subangular blocky; firm; common very fine roots; common distinct dark grayish brown (2.5Y 4/2) clay films on faces of peds; very few distinct very dark gray (2.5Y 3/1) organic coatings in root channels and in pores; common fine black (10YR 2/1) very weakly cemented iron and manganese oxide concretions throughout; few fine strong brown (7.5YR 5/6) very weakly cemented iron oxide concretions throughout; common medium prominent yellowish brown (10YR 5/6) and common fine and medium distinct light olive brown (2.5Y 5/4) masses of iron accumulation in the matrix; slightly acid; gradual smooth boundary.

Btg2—24 to 31 inches; grayish brown (2.5Y 5/2) silty clay loam; moderate medium prismatic structure parting to moderate medium angular blocky; firm; few very fine roots; few distinct dark grayish brown (2.5Y 4/2) clay films on faces of peds; very few distinct very dark grayish brown (2.5Y 3/2) organic coatings in root channels and in pores; few fine dark brown (7.5YR 3/4) very weakly cemented iron oxide concretions throughout; common medium prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; slightly acid; clear smooth boundary.

Btg3—31 to 35 inches; grayish brown (2.5Y 5/2) silty clay loam; weak medium prismatic structure parting to moderate medium subangular blocky; firm; few very fine roots; few distinct dark grayish brown (2.5Y 4/2) clay films on faces of peds; very few distinct very dark grayish brown (2.5Y 3/2) organic coatings in root channels and in pores; many medium and coarse prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; 1 percent gravel; neutral; clear smooth boundary.

2Btg4—35 to 39 inches; olive gray (5Y 4/2) clay loam; weak medium subangular blocky structure; friable; few very fine roots; few distinct olive gray (5Y 4/2) clay films on faces of peds; very few distinct dark olive gray (5Y 3/2) organic coatings in root channels and in pores; many medium and coarse prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; 3 percent gravel; neutral; abrupt smooth boundary.

3Cg—39 to 44 inches; olive gray (5Y 5/2) gravelly sandy loam; massive; very friable; few very fine roots; common fine prominent strong brown (7.5YR 4/6) masses of iron accumulation in the matrix; common fine faint light olive gray (5Y 6/2) iron depletions in the matrix; 25 percent gravel; strongly effervescent; slightly alkaline; clear smooth boundary.

3C—44 to 60 inches; brown (10YR 5/3) gravelly loamy sand and gravelly loamy fine sand; single grain; loose; few very fine roots; common fine and medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common fine and medium faint grayish brown (10YR 5/2) iron depletions in the matrix; 25 percent gravel; strongly effervescent; slightly alkaline.

MLRA Series Range in Characteristics

Thickness of the mollic epipedon: 10 to 20 inches
Thickness of silty material: 24 to 50 inches
Depth to sandy and gravelly deposits: 32 to 55 inches
Depth to carbonates: 30 to 50 inches
Thickness of the solum: 36 to 55 inches

Ap or A horizon:
Hue—10YR, 2.5Y, or N
Value—2 or 3
Chroma—0 to 2
Texture—silty clay loam or silt loam

Btg horizon:
Hue—10YR, 2.5Y, 5Y, or N

Value—4 to 6
Chroma—0 to 2
Texture—silty clay loam or silt loam

2Btg horizon:
Hue—10YR, 2.5Y, 5Y, or N
Value—5 or 6
Chroma—0 to 2
Texture—loam, silt loam, clay loam, sandy clay loam, sandy loam, or the gravelly analogs of these textures
Content of gravel—0 to 20 percent

3Cg or 3C horizon:
Hue—10YR, 2.5Y, 5Y, or N
Value—4 to 7
Chroma—0 to 8
Texture—the gravelly, very gravelly, or extremely gravelly analogs of sand, loamy sand, coarse sand, loamy coarse sand, fine sand, loamy fine sand, or sandy loam
Content of gravel—15 to 70 percent

523A—Dunham silty clay loam, 0 to 2 percent slopes

Setting

Landform: Outwash plains and stream terraces
Position on the landform: Footslopes and toeslopes
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Dunham and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that contain less gravel in the lower part of the profile
- soils that have a thinner subsurface layer
- soils that contain more sand in the upper one-half of the profile
- soils that contain sandy and gravelly deposits at a depth of less than 32 inches or more than 55 inches
- soils that contain carbonates at a depth of more than 50 inches

Dissimilar soils:
- the somewhat poorly drained Grundelein and Millstream soils and the well drained Bowes and Waupecan soils in the higher positions on the landform
- the very poorly drained Houghton and Palms soils in depressions

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Elburn Series

Drainage class: Somewhat poorly drained
Permeability: Moderate
Landform: Outwash plains and till plains
Parent material: Silty material and the underlying loamy outwash
Slope range: 0 to 2 percent
Taxonomic classification: Fine-silty, mixed, mesic Aquic Argiudolls

Typical Pedon for MLRA 95B

Typical pedon of Elburn silt loam, 0 to 2 percent slopes, 2,440 feet south and 195 feet east of the center of sec. 5, T. 40 N., R. 7 E.

Ap—0 to 9 inches; black (10YR 2/1) silt loam, dark grayish brown (10YR 4/2) dry; weak very fine granular structure; friable; common very fine roots; neutral; clear smooth boundary.
A—9 to 12 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak fine granular structure; friable; neutral; common very fine roots; clear smooth boundary.
Bt—12 to 19 inches; brown (10YR 4/3) silty clay loam; weak very fine subangular blocky structure; friable; common very fine roots; few distinct dark grayish brown (10YR 4/2) clay films on faces of peds; common distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; few fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; neutral; gradual smooth boundary.
Btg1—19 to 29 inches; dark grayish brown (10YR 4/2) silty clay loam; moderate fine subangular blocky structure; firm; few very fine roots; common distinct dark grayish brown (2.5Y 4/2) clay films on faces of peds; few fine very dark brown (10YR 2/2) very weakly cemented iron and manganese oxide concretions throughout; few fine distinct

yellowish brown (10YR 5/6) and pale brown (10YR 6/3) masses of iron accumulation in the matrix; slightly acid; gradual smooth boundary.

Btg2—29 to 35 inches; grayish brown (2.5Y 5/2) silty clay loam; weak medium subangular blocky structure; firm; few very fine roots; common distinct dark grayish brown (2.5Y 4/2) clay films on faces of peds; few fine very dark brown (10YR 2/2) very weakly cemented iron and manganese oxide concretions throughout; common fine prominent yellowish brown (10YR 5/6 and 5/8) masses of iron accumulation in the matrix; neutral; gradual smooth boundary.

Btg3—35 to 42 inches; grayish brown (2.5Y 5/2) silty clay loam; weak coarse prismatic structure; friable; few very fine roots; few distinct dark grayish brown (2.5Y 4/2) clay films on face of peds; few fine very dark brown (10YR 2/2) very weakly cemented iron and manganese oxide concretions throughout; common medium prominent yellowish brown (10YR 5/6 and 5/8) masses of iron accumulation in the matrix; neutral; gradual smooth boundary.

2BC—42 to 48 inches; light yellowish brown (2.5Y 6/4) loam; weak coarse prismatic structure; friable; few fine very dark brown (10YR 2/2) very weakly cemented iron and manganese oxide concretions throughout; many medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; many medium distinct light brownish gray (2.5Y 6/2) iron depletions in the matrix; slightly alkaline; abrupt smooth boundary.

2C—48 to 60 inches; 45 percent light yellowish brown (2.5Y 6/4), 30 percent light brownish gray (2.5Y 6/2), and 25 percent yellowish brown (10YR 5/6), stratified silt loam and sandy loam; massive; very friable; 2 percent gravel; slightly effervescent; moderately alkaline.

MLRA Series Range in Characteristics

Thickness of the mollic epipedon: 10 to 20 inches
Thickness of silty material: 40 to 60 inches
Depth to carbonates: 45 to 70 inches
Thickness of the solum: 45 to 65 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—silt loam

Bt or Btg horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—2 to 4
Texture—silty clay loam or silt loam

2BC horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 6
Texture—loam, silt loam, sandy loam, clay loam, or silty clay loam

2C horizon:
Hue—7.5YR, 10YR, or 2.5Y
Value—4 to 6
Chroma—2 to 8
Texture—loam, silt loam, or sandy loam

198A—Elburn silt loam, 0 to 2 percent slopes

Setting

Landform: Outwash plains and till plains
Position on the landform: Footslopes
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Elburn and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have no subsurface layer
- soils that contain more sand in the middle part of the subsoil
- soils that have a seasonal high water table at a depth of more than 2.5 feet

Dissimilar soils:
- the poorly drained Pella soils in depressions and drainageways
- the well drained Ringwood soils in the higher positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Elliott Series

Drainage class: Somewhat poorly drained
Permeability: Moderately slow in the upper part and slow in the lower part
Landform: Moraines and till plains
Parent material: Thin mantle of silty material and the underlying silty clay loam till
Slope range: 0 to 4 percent
Taxonomic classification: Fine, illitic, mesic Aquic Argiudolls

Typical Pedon for MLRA 95B

Typical pedon of Elliott silt loam, 2 to 4 percent slopes, 1,164 feet north and 2,394 feet west of the southeast corner of sec. 20, T. 44 N., R. 7 E.

Ap—0 to 8 inches; black (10YR 2/1) silt loam, dark gray (10YR 4/1) dry; moderate medium granular structure; friable; common very fine roots; slightly acid; abrupt smooth boundary.

A—8 to 13 inches; black (10YR 2/1) silty clay loam, dark gray (10YR 4/1) dry; moderate fine subangular blocky structure parting to weak fine granular; friable; common very fine roots; slightly acid; abrupt smooth boundary.

2AB—13 to 16 inches; 80 percent very dark gray (10YR 3/1) and 20 percent brown (10YR 4/3) silty clay loam; moderate fine subangular blocky structure; friable; common very fine roots; common distinct black (10YR 2/1) organic coatings on faces of peds and in pores; 1 percent gravel; neutral; clear smooth boundary.

2Bt—16 to 21 inches; brown (10YR 4/3) silty clay; moderate medium prismatic structure parting to moderate fine subangular blocky; firm; common very fine roots; common distinct dark gray (10YR 4/1) and few distinct dark grayish brown (10YR 4/2) clay films on faces of peds and in pores; few distinct very dark gray (10YR 3/1) organic coatings on faces of peds and in pores; 1 percent gravel; neutral; clear smooth boundary.

2Btg—21 to 26 inches; grayish brown (2.5Y 5/2) silty clay loam; moderate medium prismatic structure; firm; common very fine and fine roots; common distinct gray (2.5Y 5/1) and few distinct dark gray (10YR 4/1) clay films on faces of peds and in pores; common fine strong brown (7.5YR 4/6) very weakly cemented iron oxide concretions throughout; common fine and medium faint light brownish gray (2.5Y 6/2) iron depletions in the matrix; 3 percent gravel; slightly effervescent at a depth of 24 inches; slightly alkaline; clear smooth boundary.

2BCg—26 to 33 inches; gray (2.5Y 6/1) silty clay loam; weak medium and coarse prismatic structure; firm; common very fine roots; common fine strong brown (7.5YR 4/6) and common fine and medium brown (7.5YR 4/4) very weakly cemented iron oxide concretions throughout; many fine and medium prominent yellowish brown (10YR 5/4) masses of iron accumulation in the matrix; 3 percent gravel; strongly effervescent; moderately alkaline; clear wavy boundary.

2Cg—33 to 60 inches; gray (2.5Y 6/1) silty clay loam; massive; firm; common very fine roots; common fine and medium prominent dark yellowish brown (10YR 4/4) and strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; 7 percent gravel; strongly effervescent; moderately alkaline.

MLRA Series Range in Characteristics

Thickness of the mollic epipedon: 10 to 18 inches
Thickness of silty material: Less than 20 inches
Depth to carbonates: 17 to 40 inches
Thickness of the solum: 20 to 45 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—silt loam or silty clay loam

2Bt or 2Btg horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 4
Texture—silty clay loam or silty clay

2C or 2Cg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 to 4
Texture—silty clay loam

146A—Elliott silt loam, 0 to 2 percent slopes

Setting

Landform: Moraines and till plains
Position on the landform: Summits and footslopes
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Elliott and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a seasonal high water table at a depth of more than 2.5 feet
- soils that have no subsurface layers
- soils that contain more sand in the upper part of the profile

Dissimilar soils:
- the poorly drained Ashkum and very poorly drained Peotone soils in drainageways and depressions

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

146B—Elliott silt loam, 2 to 4 percent slopes

Setting

Landform: Moraines and till plains
Position on the landform: Summits, backslopes, and footslopes
Slope range: 2 to 4 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Elliott and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a seasonal high water table at a depth of more than 2.5 feet
- soils that contain more sand in the upper part of the profile
- soils that have no subsurface layers
- soils that are moderately eroded

Dissimilar soils:
- the poorly drained Ashkum and very poorly drained Peotone soils in drainageways and depressions

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Fox Series

Drainage class: Well drained
Permeability: Moderate in the upper part and very rapid in the lower part
Landform: Stream terraces, kames, outwash plains, and moraines
Parent material: Loamy drift over sandy and gravelly deposits
Slope range: 0 to 12 percent
Taxonomic classification: Fine-loamy over sandy or sandy-skeletal, mixed, mesic Typic Hapludalfs

Typical Pedon for MLRA 95B

Typical pedon of Fox silt loam, 0 to 2 percent slopes, 1,500 feet south and 1,600 feet east of the northwest corner of sec. 32, T. 7 N., R. 13 E.

Ap—0 to 10 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; weak very fine subangular blocky structure; very friable; slightly acid; abrupt smooth boundary.

Bt1—10 to 15 inches; dark yellowish brown (10YR 4/4) silt loam; weak very fine subangular blocky structure; friable; few faint dark yellowish brown (10YR 4/4) clay films on faces of peds; slightly acid; clear wavy boundary.

Bt2—15 to 21 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate fine subangular blocky structure; firm; few faint dark brown (10YR 3/3) clay films on faces of peds; moderately acid; clear wavy boundary.

2Bt3—21 to 29 inches; brown (7.5YR 4/4) clay loam; moderate medium subangular blocky structure; firm; common prominent very dark grayish brown (10YR 3/2) clay films on faces of peds; slightly acid; clear wavy boundary.

2Bt4—29 to 33 inches; brown (7.5YR 4/4) sandy clay loam; weak medium subangular blocky structure; firm; common distinct dark brown (7.5YR 3/2) clay films on faces of peds; about 5 percent gravel; slightly alkaline; clear wavy boundary.

3C1—33 to 45 inches; yellowish brown (10YR 5/4), stratified gravelly sand and cobbly sand; single

grain; loose; about 30 percent gravel and 30 percent cobbles (as an average); strongly effervescent; moderately alkaline; clear wavy boundary.

3C2—45 to 60 inches; light yellowish brown (10YR 6/4), stratified very gravelly sand, extremely gravelly sand, and gravel; single grain; loose; about 65 percent gravel (as an average); strongly effervescent; moderately alkaline.

MLRA Series Range in Characteristics

Depth to sandy and gravelly deposits: 20 to 40 inches
Depth to carbonates: 20 to 40 inches
Thickness of the solum: 20 to 40 inches

Ap or A horizon:
Hue—10YR
Value—3 or 4
Chroma—2 or 3
Texture—silt loam or loam

Bt horizon:
Hue—7.5YR or 10YR
Value—4
Chroma—3 or 4
Texture—silty clay loam or silt loam

2Bt horizon:
Hue—7.5YR or 10YR
Value—3 or 4
Chroma—3 or 4
Texture—clay loam, loam, sandy clay loam, sandy loam, or the gravelly analogs of these textures
Content of gravel—0 to 35 percent

3C horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 or 4
Texture—the gravelly, very gravelly, extremely gravelly, cobbly, or very cobbly analogs of sand or coarse sand
Content of gravel—15 to 70 percent
Content of cobbles—0 to 50 percent

327A—Fox silt loam, 0 to 2 percent slopes

Setting

Landform: Stream terraces, kames, outwash plains, and moraines
Position on the landform: Summits
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Fox and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a darker surface layer
- soils that contain sandy and gravelly deposits at a depth of more than 40 inches or less than 20 inches
- soils that contain less sand and more silt in the lower one-half of the subsoil
- soils that contain loamy till in the lower part of the profile

Dissimilar soils:
- the somewhat poorly drained Kane soils in the lower positions on the landform
- the poorly drained Will soils in depressions and drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

327B—Fox silt loam, 2 to 4 percent slopes

Setting

Landform: Stream terraces, kames, outwash plains, and moraines
Position on the landform: Summits, shoulders, and backslopes
Slope range: 2 to 4 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Fox and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a darker surface layer
- soils that contain sandy and gravelly deposits at a depth of more than 40 inches or less than 20 inches
- soils that contain less sand and more silt in the lower one-half of the subsoil
- soils that contain loamy till in the lower part of the profile
- soils that have slopes of less than 2 percent

Dissimilar soils:
- the somewhat poorly drained Kane soils in the lower positions on the landform
- the poorly drained Will soils in depressions and drainageways
- the excessively drained Rodman soils in the slightly higher positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

327C2—Fox silt loam, 4 to 6 percent slopes, eroded

Setting

Landform: Stream terraces, kames, outwash plains, and moraines
Position on the landform: Backslopes and shoulders
Slope range: 4 to 6 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Fox and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a darker surface layer
- soils that contain sandy and gravelly deposits at a depth of more than 40 inches or less than 20 inches
- soils that contain less sand and more silt in the lower one-half of the profile
- soils that contain loamy till in the lower part of the profile
- soils that have slopes of less than 4 percent or more than 6 percent

Dissimilar soils:
- the somewhat poorly drained Kane soils in the lower positions on the landform
- the poorly drained Will soils in depressions and drainageways
- the excessively drained Rodman soils in positions on the landform similar to those of the Fox soil

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

327D2—Fox loam, 6 to 12 percent slopes, eroded

Setting

Landform: Stream terraces, kames, outwash plains, and moraines
Position on the landform: Backslopes
Slope range: 6 to 12 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Fox and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a darker surface layer
- soils that contain sandy and gravelly deposits at a depth of more than 40 inches or less than 20 inches
- soils that contain less sand and more silt in the lower one-half of the subsoil
- soils that contain loamy till in the lower part of the profile
- soils that have slopes of less than 6 percent or more than 12 percent

Dissimilar soils:
- the somewhat poorly drained Kane soils in the lower positions on the landform
- the poorly drained Will soils in depressions and drainageways
- the excessively drained Rodman soils in positions on the landform similar to those of the Fox soil

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Geryune Series

Drainage class: Moderately well drained
Permeability: Moderate
Landform: Moraines and till plains
Parent material: Silty material and the underlying loamy till
Slope range: 0 to 5 percent
Taxonomic classification: Fine-silty, mixed, mesic Oxyaquic Argiudolls

Typical Pedon for MLRA 95B

Typical pedon of Geryune silt loam, 2 to 5 percent slopes, 250 feet north and 260 feet east of the southwest corner of sec. 36, T. 45 N., R. 4 E.

Ap—0 to 9 inches; very dark gray (10YR 3/1) silt loam, gray (10YR 5/1) dry; moderate very fine subangular blocky structure parting to weak very fine and fine granular; friable; many very fine roots; moderately acid; abrupt smooth boundary.

AB—9 to 14 inches; dark brown (10YR 3/3) silt loam, brown (10YR 5/3) dry; weak medium platy structure parting to moderate fine granular; friable; many very fine roots; few distinct discontinuous very dark grayish brown (10YR 3/2) organic coatings and white (10YR 8/1 dry) clay depletions on faces of peds; neutral; clear smooth boundary.

Bt1—14 to 19 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate very fine subangular blocky structure; friable; many very fine roots; few distinct continuous brown (10YR 4/3) clay films on faces of peds; few distinct discontinuous white (10YR 8/1 dry) clay depletions on faces of peds; few very dark gray (10YR 3/1) fillings of worm channels; neutral; gradual smooth boundary.

Bt2—19 to 28 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate fine subangular blocky structure; friable; common very fine roots; common distinct continuous brown (10YR 4/3) clay films on faces of peds; few distinct discontinuous white (10YR 8/1 dry) clay depletions on faces of peds; few very dark gray (10YR 3/1) fillings of worm channels; neutral; abrupt smooth boundary.

2Bt3—28 to 37 inches; brown (7.5YR 4/4) clay loam; moderate medium prismatic structure parting to moderate medium and coarse angular blocky; friable; few very fine roots; common distinct continuous brown (10YR 4/3) clay films on vertical faces of peds; many distinct continuous pale brown (10YR 6/3 dry) clay depletions on vertical faces of peds; common medium distinct brown (7.5YR 5/2) iron depletions in the matrix; 10 percent gravel; neutral; clear smooth boundary.

2Bt4—37 to 43 inches; brown (7.5YR 4/4) clay loam; moderate medium prismatic structure; friable; few very fine roots; common distinct continuous brown (7.5YR 4/2) clay films on vertical faces of peds; 10 percent gravel; neutral; clear wavy boundary.

2C—43 to 72 inches; brown (7.5YR 5/4) loam; massive; friable; few distinct brown (7.5YR 4/2) linings in worm channels in the upper 6 inches; 12 percent gravel; strongly effervescent; moderately alkaline.

MLRA Series Range in Characteristics

Thickness of the mollic epipedon: 10 to 18 inches
Thickness of silty material: 22 to 40 inches
Depth to carbonates: 30 to 50 inches
Thickness of the solum: 36 to 55 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 to 3
Texture—silt loam

Bt horizon:
Hue—10YR
Value—4 to 6
Chroma—3 or 4
Texture—silty clay loam or silt loam

2Bt or 2BC horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 6

Texture—clay loam, loam, or sandy clay loam
Content of gravel—2 to 10 percent

2C horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 6
Texture—loam or sandy loam
Content of gravel—3 to 15 percent

625A—Geryune silt loam, 0 to 2 percent slopes

Setting

Landform: Moraines and till plains
Position on the landform: Summits
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the "Soil Properties" section in Part II of this publication.

Composition

Geryune and similar soils: 90 percent
Dissimilar soils: 10 percent

Similar soils:
- soils that have slopes of more than 2 percent
- soils that have no subsurface layer
- soils that have a seasonal high water table at a depth of less than 2 feet or more than 3.5 feet
- soils that contain more sand in the upper one-half of the profile

Dissimilar soils:
- the poorly drained Pella soils in drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- "Agronomy" section
- "Wildlife Habitat" section
- "Engineering" section
- "Soil Properties" section

625B—Geryune silt loam, 2 to 5 percent slopes

Setting

Landform: Moraines and till plains
Position on the landform: Summits, shoulders, and backslopes
Slope range: 2 to 5 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the "Soil Properties" section in Part II of this publication.

Composition

Geryune and similar soils: 90 percent
Dissimilar soils: 10 percent

Similar soils:
- soils that have slopes of less than 2 percent
- soils that have no subsurface layer
- soils that have a seasonal high water table at a depth of less than 2 feet or more than 3.5 feet
- soils that contain more sand in the upper one-half of the subsoil

Dissimilar soils:
- the poorly drained Pella soils in drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- "Agronomy" section
- "Wildlife Habitat" section
- "Engineering" section
- "Soil Properties" section

Griswold Series

Drainage class: Well drained
Permeability: Moderate
Landform: Moraines and till plains
Parent material: Loamy till
Slope range: 2 to 12 percent
Taxonomic classification: Fine-loamy, mixed, mesic Typic Argiudolls
Taxadjunct features: Griswold loam, 6 to 12 percent slopes, eroded, has a mollic epipedon that is less than 10 inches thick or that makes up less than one-third of the solum thickness. This soil is classified as a fine-loamy, mixed, mesic Mollic Hapludalf.

Typical Pedon for MLRA 95B

Typical pedon of Griswold loam, 4 to 6 percent slopes, eroded, 1,000 feet north and 1,850 feet west of the southeast corner of sec. 33, T. 46 N., R. 8 E.

Ap—0 to 10 inches; 95 percent very dark grayish

brown (10YR 3/2) and 5 percent brown (10YR 4/3) loam, grayish brown (10YR 5/2) dry; weak medium subangular blocky structure parting to moderate fine and medium granular; friable; many very fine roots; 1 percent gravel; neutral; clear smooth boundary.

Bt1—10 to 14 inches; 85 percent dark yellowish brown (10YR 4/4) and 15 percent very dark grayish brown (10YR 3/2) clay loam; moderate very fine and fine subangular blocky structure; friable; many very fine roots; few distinct brown (10YR 4/3) clay films and dark brown (10YR 3/3) organo-clay films on faces of peds and in pores; 1 percent gravel; neutral; clear smooth boundary.

Bt2—14 to 20 inches; dark yellowish brown (10YR 4/4) clay loam; moderate fine and medium subangular blocky structure; friable; many very fine roots; common distinct brown (10YR 4/3) clay films on faces of peds and in pores; few distinct dark brown (10YR 3/3) organo-clay films on faces of peds and in pores; 3 percent gravel; neutral; clear wavy boundary.

Bt3—20 to 24 inches; dark yellowish brown (10YR 4/4) loam; weak medium subangular blocky structure; friable; common very fine roots; few distinct brown (10YR 4/3) clay films on faces of peds and in pores; very few distinct very dark grayish brown (10YR 3/2) organo-clay films in root channels and in pores; 5 percent gravel; neutral; clear smooth boundary.

BC—24 to 27 inches; yellowish brown (10YR 5/4) sandy loam; weak medium subangular blocky structure; friable; common very fine roots; 10 percent gravel; slightly effervescent; slightly alkaline; clear wavy boundary.

C—27 to 60 inches; yellowish brown (10YR 5/4) sandy loam; massive; friable; few very fine roots; 13 percent gravel; strongly effervescent; moderately alkaline.

MLRA Series Range in Characteristics

Thickness of the mollic epipedon: 7 to 16 inches
Depth to carbonates: 20 to 32 inches
Thickness of the solum: 24 to 40 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 to 3
Texture—loam or silt loam

Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 or 4
Texture—clay loam, loam, or sandy loam

C horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 to 6
Texture—sandy loam or gravelly sandy loam
Content of gravel—10 to 35 percent

363B—Griswold loam, 2 to 4 percent slopes

Setting

Landform: Moraines and till plains
Position on the landform: Summits, shoulders, and backslopes
Slope range: 2 to 4 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Griswold and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that contain less sand and more silt in the upper one-third of the profile
- soils that are moderately eroded
- soils that contain more clay in the lower part of the profile

Dissimilar soils:
- the somewhat poorly drained Elburn soils in the lower positions on the landform
- the poorly drained Pella soils in drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

363C2—Griswold loam, 4 to 6 percent slopes, eroded

Setting

Landform: Moraines and till plains
Position on the landform: Summits, shoulders, and backslopes
Slope range: 4 to 6 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Griswold and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have slopes of less than 4 percent
- soils that are severely eroded
- soils that contain more clay in the lower part of the profile

Dissimilar soils:
- the somewhat poorly drained Elburn soils in the lower positions on the landform
- the poorly drained Pella soils in drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

363D2—Griswold loam, 6 to 12 percent slopes, eroded

Setting

Landform: Moraines and till plains
Position on the landform: Backslopes and shoulders
Slope range: 6 to 12 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Griswold and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have slopes of less than 6 percent
- soils that are severely eroded
- soils that contain more clay in the lower part of the profile

Dissimilar soils:
- the somewhat poorly drained Elburn soils in the lower positions on the landform
- the poorly drained Pella soils in drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Grundelein Series

Drainage class: Somewhat poorly drained
Permeability: Moderate in the upper part and very rapid in the lower part
Landform: Outwash plains and stream terraces
Parent material: Silty material and the underlying loamy outwash over sandy and gravelly deposits
Slope range: 0 to 2 percent
Taxonomic classification: Fine-silty, mixed, mesic Aquic Argiudolls

Typical Pedon for MLRA 95B

Typical pedon of Grundelein silt loam, 1,875 feet south and 2,526 feet west of the northeast corner of sec. 15, T. 45 N., R. 5 E.

Ap—0 to 7 inches; black (10YR 2/1) silt loam, dark grayish brown (10YR 4/2) dry; weak medium subangular blocky structure parting to moderate fine and medium granular; friable; common very fine roots; neutral; clear smooth boundary.

A—7 to 11 inches; very dark brown (10YR 2/2) silt loam, brown (10YR 4/3) dry; weak medium subangular blocky structure; friable; common very fine roots; common distinct black (10YR 2/1) organic coatings on faces of peds; neutral; abrupt smooth boundary.

Bt1—11 to 19 inches; brown (10YR 5/3) silty clay loam; moderate fine and medium subangular

blocky structure; friable; common very fine roots; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; few distinct black (10YR 2/1) organic coatings on faces of peds and in pores; few fine black (5YR 2.5/1) very weakly cemented iron and manganese oxide concretions throughout; common fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common fine faint grayish brown (10YR 5/2) iron depletions in the matrix; neutral; clear smooth boundary.

Bt2—19 to 29 inches; light olive brown (2.5Y 5/4) silty clay loam; weak medium prismatic structure parting to moderate medium subangular blocky; friable; few very fine roots; common distinct dark grayish brown (2.5Y 4/2) clay films on faces of peds; few fine black (5YR 2.5/1) very weakly cemented iron and manganese oxide concretions throughout; many medium distinct light olive brown (2.5Y 5/6) masses of iron accumulation in the matrix; many fine and medium distinct grayish brown (2.5Y 5/2) iron depletions in the matrix; neutral; clear smooth boundary.

Bt3—29 to 33 inches; light olive brown (2.5Y 5/4) silty clay loam; weak medium prismatic structure parting to moderate medium subangular blocky; firm; few very fine roots; few distinct olive brown (2.5Y 4/4) and dark grayish brown (2.5Y 4/2) clay films on faces of peds; common medium very dark gray (10YR 3/1) wormcasts; few fine black (5YR 2.5/1) very weakly cemented iron and manganese oxide concretions throughout; common fine and medium prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; many medium and coarse distinct grayish brown (2.5Y 5/2) iron depletions in the matrix; neutral; clear wavy boundary.

2BCg—33 to 39 inches; grayish brown (2.5Y 5/2) clay loam; weak medium and coarse subangular blocky structure; friable; few very fine roots; common medium very dark brown (10YR 2/2) wormcasts; few fine black (5YR 2.5/1) very weakly cemented iron and manganese oxide concretions throughout; common fine and medium prominent brownish yellow (10YR 6/6) and strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; 5 percent gravel; neutral; clear wavy boundary.

3C1—39 to 46 inches; yellowish brown (10YR 5/4), stratified gravelly sandy loam and gravelly loamy sand; massive; very friable; common fine distinct brownish yellow (10YR 6/6) masses of iron accumulation in the matrix; 20 percent gravel; strongly effervescent; slightly alkaline; gradual wavy boundary.

3C2—46 to 60 inches; brown (10YR 5/3), stratified gravelly loamy sand, gravelly sand, and gravelly sandy loam; single grain; loose; common fine distinct brownish yellow (10YR 6/6) masses of iron accumulation in the matrix; 20 percent gravel; strongly effervescent; slightly alkaline.

MLRA Series Range in Characteristics

Thickness of the mollic epipedon: 10 to 20 inches
Thickness of silty material: 24 to 45 inches
Depth to sandy and gravelly deposits: 32 to 50 inches
Depth to carbonates: 30 to 50 inches
Thickness of the solum: 32 to 50 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—silt loam

Bt horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 4
Texture—silty clay loam or silt loam

2Bt or 2BC horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 6
Texture—loam, clay loam, sandy clay loam, silt loam, sandy loam, or the gravelly analogs of these textures
Content of gravel—0 to 20 percent

2C horizon:
Hue—7.5YR, 10YR, or 2.5Y
Value—4 to 7
Chroma—1 to 8
Texture—the gravelly, very gravelly, or extremely gravelly analogs of sand, loamy sand, sandy loam, coarse sand, loamy coarse sand, or coarse sandy loam
Content of gravel—15 to 70 percent

526A—Grundelein silt loam, 0 to 2 percent slopes

Setting

Landform: Outwash plains and stream terraces
Position on the landform: Footslopes
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Grundelein and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have no subsurface layer
- soils that contain more sand in the upper one-half of the profile
- soils that contain sandy and gravelly deposits at a depth of less than 32 inches or more than 50 inches
- soils that contain carbonates at a depth of more than 50 inches
- soils that contain less gravel in the lower part of the profile

Dissimilar soils:
- the poorly drained Dunham soils and the very poorly drained Houghton and Palms soils in depressions and drainageways
- the well drained Bowes and Waupecan soils in the higher positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Harpster Series

Drainage class: Poorly drained
Permeability: Moderate
Landform: Outwash plains and moraines
Parent material: Calcareous drift
Slope range: 0 to 2 percent
Taxonomic classification: Fine-silty, mesic Typic Calciaquolls

Typical Pedon for MLRA 95B

Typical pedon of Harpster silt loam, 0 to 2 percent slopes, undrained, 1,100 feet south and 400 feet west of the northeast corner of sec. 5, T. 45 N., R. 8 E.

Ak1—0 to 3 inches; black (10YR 2/1) silt loam, dark gray (10YR 4/1) dry; moderate fine granular structure; very friable; many very fine and fine roots; 10 percent fine snail-shell fragments; violently effervescent; moderately alkaline; clear smooth boundary.

Ak2—3 to 11 inches; black (N 2.5/0) silty clay loam, dark gray (10YR 4/1) dry; moderate fine and medium granular structure; friable; common very fine and fine roots; 20 percent fine snail-shell fragments; violently effervescent; moderately alkaline; clear smooth boundary.

ABk—11 to 18 inches; 80 percent very dark gray (N 3/0) and 20 percent dark gray (5Y 4/1) silty clay loam; moderate fine and medium subangular blocky structure; friable; common very fine and fine roots; 10 percent fine snail-shell fragments; common fine prominent grayish brown (2.5Y 5/2) iron depletions in the matrix; 1 percent gravel; strongly effervescent; moderately alkaline; clear smooth boundary.

Bg—18 to 28 inches; light olive gray (5Y 6/2) silty clay loam; few thin strata of clay loam; moderate medium prismatic structure parting to moderate fine and medium subangular blocky; firm; common very fine roots; common fine strong brown (7.5YR 4/6) very weakly cemented iron oxide concretions throughout; many fine prominent yellowish brown (10YR 5/4) masses of iron accumulation in the matrix; 2 percent gravel; strongly effervescent; moderately alkaline; clear wavy boundary.

BCg—28 to 34 inches; light olive gray (5Y 6/2) silty clay loam; few thin strata of clay loam; weak medium and coarse prismatic structure parting to weak medium subangular blocky; firm; common very fine and few medium roots; few distinct very dark gray (2.5Y 3/1) organic coatings in root channels and in pores; common fine and medium strong brown (7.5YR 5/6) very weakly cemented iron oxide concretions throughout; many fine and medium prominent yellowish brown (10YR 5/4) masses of iron accumulation in the matrix; 1 percent gravel; strongly effervescent; slightly alkaline; clear wavy boundary.

Cg1—34 to 43 inches; gray (5Y 6/1) silty clay loam; few thin strata of loam; massive; firm; common very fine and few medium roots; common fine and medium strong brown (7.5YR 5/6) very weakly cemented iron oxide concretions throughout; many fine and medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; 4 percent gravel; violently effervescent; moderately alkaline; clear smooth boundary.

Cg2—43 to 60 inches; 50 percent gray (5Y 6/1), 40 percent olive brown (2.5Y 4/4), and 10 percent gray (2.5Y 5/1), stratified silty clay loam, sand,

and sandy loam; massive; friable; few very fine roots; many fine and medium prominent dark yellowish brown (10YR 4/4) masses of iron accumulation in the matrix; 5 percent gravel; violently effervescent; moderately alkaline.

MLRA Series Range in Characteristics

Thickness of the mollic epipedon: 10 to 22 inches
Thickness of silty material: 30 to 60 inches
Depth to carbonates: Less than 10 inches
Thickness of the solum: 22 to 46 inches

Apk, Ak, Ap, or A horizon:
Hue—10YR, 2.5Y, 5Y, or N
Value—2 or 3
Chroma—0 or 1
Texture—silt loam or silty clay loam

Bg or Bkg horizon:
Hue—10YR, 2.5Y, 5Y, or N
Value—4 to 6
Chroma—0 to 2
Texture—silty clay loam, silt loam, loam, or clay loam

Cg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 to 4
Texture—silty clay loam, silt loam, loam, or sandy loam

67A—Harpster silty clay loam, 0 to 2 percent slopes

Setting

Landform: Outwash plains and moraines
Position on the landform: Footslopes and toeslopes
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Harpster and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that contain more sand in the subsoil
- soils that are darker in the upper part of the subsoil
- soils that contain more gravel in the lower part of the profile
- soils that do not contain carbonates at or near the surface

Dissimilar soils:
- the somewhat poorly drained Brenton and Millbrook soils in the higher positions on the landform
- the very poorly drained Houghton and Lena soils in depressions

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

1067A—Harpster silt loam, 0 to 2 percent slopes, undrained

Setting

Landform: Outwash plains and moraines
Position on the landform: Depressions
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Harpster and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that contain more sand in the subsoil
- soils that are darker in the upper part of the subsoil
- soils that contain more gravel in the lower part of the profile
- soils that do not contain carbonates at or near the surface

Dissimilar soils:
- the somewhat poorly drained Brenton and Millbrook soils in the higher positions on the landform
- the very poorly drained Houghton and Lena soils in positions on the landform similar to those of the Harpster soil

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Harvard Series

Drainage class: Well drained
Permeability: Moderate
Landform: Outwash plains and stream terraces
Parent material: Silty material and the underlying loamy outwash
Slope range: 0 to 5 percent
Taxonomic classification: Fine-silty, mixed, mesic Mollic Hapludalfs

Typical Pedon for MLRA 95B

Typical pedon of Harvard silt loam, 2 to 5 percent slopes, 1,458 feet north and 756 feet east of the southwest corner of sec. 12, T. 42 N., R. 5 E.

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak fine and medium subangular blocky structure parting to moderate medium granular; friable; common very fine roots; neutral; abrupt smooth boundary.

Bt1—9 to 16 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium subangular blocky structure; friable; common very fine roots; few distinct brown (10YR 4/3) clay films and very dark grayish brown (10YR 3/2) organic coatings on faces of peds and in pores; neutral; clear wavy boundary.

Bt2—16 to 23 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium prismatic structure parting to moderate fine and medium subangular blocky; friable; common very fine roots; common distinct brown (10YR 4/3) clay films on faces of peds and in pores; very few very dark grayish brown (10YR 3/2) organic coatings in root channels and in pores; moderately acid; clear wavy boundary.

Bt3—23 to 30 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium prismatic structure parting to moderate fine and medium subangular blocky; friable; common very fine roots; few distinct brown (10YR 4/3) clay films on faces of peds and in pores; slightly acid; clear wavy boundary.

2Bt4—30 to 43 inches; dark yellowish brown (10YR 4/4) sandy clay loam; moderate fine and medium subangular blocky structure; friable; common very fine roots; few distinct brown (10YR 4/3) clay films on faces of peds and in pores; moderately acid; clear wavy boundary.

2Bt5—43 to 56 inches; dark yellowish brown (10YR 4/4) loam; weak fine and medium subangular blocky structure; friable; few very fine roots; few distinct brown (10YR 4/3) clay films on faces of peds and in pores; moderately acid; clear smooth boundary.

2C—56 to 69 inches; yellowish brown (10YR 5/4), stratified silt loam and loam; massive; friable; few very fine roots; common fine distinct grayish brown (10YR 5/2) and light olive brown (2.5Y 5/3) iron depletions in the matrix; slightly acid.

MLRA Series Range in Characteristics

Thickness of silty material: 20 to 40 inches
Depth to carbonates: Greater than 40 inches
Thickness of the solum: 36 to 60 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 to 3
Texture—silt loam

Bt horizon:
Hue—10YR
Value—4 or 5
Chroma—3 or 4
Texture—silty clay loam or silt loam

2Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 to 6
Texture—loam, silt loam, sandy clay loam, sandy loam, or clay loam

2C horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 to 6
Texture—loam, silt loam, sandy loam, or loamy sand

344A—Harvard silt loam, 0 to 2 percent slopes

Setting

Landform: Outwash plains and stream terraces
Position on the landform: Summits
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this

section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Harvard and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a lighter colored surface layer
- soils that have a thicker surface layer
- soils that contain loamy outwash at a depth of more than 40 inches
- soils that contain sandy and gravelly deposits in the lower part of the profile

Dissimilar soils:
- the somewhat poorly drained Brenton and Millbrook soils in the lower positions on the landform
- the poorly drained Pella soils in drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

344B—Harvard silt loam, 2 to 5 percent slopes

Setting

Landform: Outwash plains and stream terraces
Position on the landform: Summits, shoulders, and backslopes
Slope range: 2 to 5 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Harvard and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a lighter colored surface layer
- soils that have a thicker surface layer
- soils that contain loamy outwash at a depth of more than 40 inches
- soils that contain sandy and gravelly deposits in the lower part of the profile

Dissimilar soils:
- the somewhat poorly drained Brenton and Millbrook soils in the lower positions on the landform
- the poorly drained Pella soils in drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Herbert Series

Drainage class: Somewhat poorly drained
Permeability: Moderate in the upper part and moderately slow in the lower part
Landform: Moraines and till plains
Parent material: Silty material and the underlying loamy till
Slope range: 0 to 2 percent
Taxonomic classification: Fine-silty, mixed, mesic Udollic Epiaqualfs

Typical Pedon for MLRA 95B

Typical pedon of Herbert silt loam, 335 feet south and 306 feet east of the northwest corner of sec. 14, T. 42 N., R. 4 E.

Ap—0 to 8 inches; very dark brown (10YR 2/2) silt loam, dark grayish brown (10YR 4/2) dry; moderate very fine granular structure; friable; many very fine and fine roots; slightly acid; abrupt smooth boundary.

E—8 to 12 inches; dark grayish brown (10YR 4/2) silt loam; weak medium and thick platy structure parting to moderate fine granular; friable; many very fine roots; few fine faint brown (10YR 5/3) masses of iron accumulation in the matrix; slightly acid; clear smooth boundary.

Bt1—12 to 16 inches; brown (10YR 4/3) silty clay loam; moderate very fine subangular blocky structure; firm; many very fine roots; common distinct discontinuous dark grayish brown (10YR 4/2) clay films on faces of peds; few fine faint brown (10YR 5/3) masses of iron accumulation in the matrix; few fine distinct grayish brown (2.5Y

5/2) iron depletions in the matrix; slightly acid; clear smooth boundary.

Bt2—16 to 20 inches; brown (10YR 4/3) silty clay loam; moderate fine subangular blocky structure; firm; many very fine roots; many distinct continuous grayish brown (10YR 5/2) clay films on faces of peds; few fine dark brown (10YR 3/3) iron and manganese oxide concretions throughout; few fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common fine distinct grayish brown (2.5Y 5/2) iron depletions in the matrix; moderately acid; clear smooth boundary.

Bt3—20 to 26 inches; grayish brown (10YR 5/2) silty clay loam; moderate medium subangular blocky structure; firm; common very fine roots; common distinct continuous dark grayish brown (2.5Y 4/2) clay films on faces of peds; common distinct very dark brown (10YR 2/2) organic coatings in root channels; few fine dark brown (10YR 3/3) iron and manganese oxide concretions throughout; common medium prominent strong brown (7.5YR 5/6) and common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; moderately acid; clear smooth boundary.

2Bt4—26 to 33 inches; brown (7.5YR 5/4) clay loam; moderate medium angular and subangular blocky structure; firm; common very fine roots; common distinct discontinuous dark grayish brown (2.5Y 4/2) clay films on faces of peds; common distinct very dark brown (10YR 2/2) organic coatings in root channels; few fine dark brown (10YR 3/3) iron and manganese oxide concretions throughout; common medium prominent yellowish brown (10YR 5/6) and common medium distinct strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; 2 percent gravel; moderately acid; clear smooth boundary.

2Bt5—33 to 36 inches; brown (7.5YR 5/3) clay loam; weak coarse angular blocky structure; firm; common very fine roots; common distinct discontinuous dark grayish brown (2.5Y 4/2) clay films on faces of peds; common distinct very dark brown (10YR 2/2) organic coatings in root channels; few fine dark brown (10YR 3/3) iron and manganese oxide concretions throughout; common medium distinct strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; common medium distinct light brownish gray (10YR 6/2) iron depletions in the matrix; 2 percent gravel; neutral; clear smooth boundary.

2C—36 to 60 inches; brown (7.5YR 5/4) loam; massive; firm; few very fine roots; few fine light gray (10YR 7/1) very weakly cemented calcium carbonate concretions throughout; few fine prominent gray (5Y 6/1) and few fine distinct very pale brown (10YR 7/3) iron depletions in the matrix; 3 percent gravel; strongly effervescent; moderately alkaline.

MLRA Series Range in Characteristics

Thickness of silty material: 20 to 40 inches
Depth to carbonates: 22 to 40 inches
Thickness of the solum: 22 to 40 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 to 3
Texture—silt loam

E horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—1 or 2
Texture—silt loam

Bt horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 6
Texture—silty clay loam or silt loam

2Bt or 2BC horizon:
Hue—7.5YR, 10YR, or 2.5Y
Value—4 to 6
Chroma—2 to 6
Texture—clay loam or loam

2C horizon:
Hue—7.5YR, 10YR, or 2.5Y
Value—4 to 6
Chroma—2 to 6
Texture—loam or sandy loam
Content of gravel—2 to 15 percent

62A—Herbert silt loam, 0 to 2 percent slopes

Setting

Landform: Moraines and till plains
Position on the landform: Footslopes
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Herbert and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that contain more sand in the upper one-half of the subsoil
- soils that contain carbonates at a depth of more than 40 inches
- soils that are overlain by recent, light-colored deposition
- soils that have a lighter colored surface layer
- soils that have a darker subsurface layer

Dissimilar soils:
- the moderately well drained Kidami and well drained Octagon soils in the higher positions on the landform
- the poorly drained Pella soils in drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Hoopeston Series

Drainage class: Somewhat poorly drained
Permeability: Moderately rapid in the upper part and rapid in the lower part
Landform: Outwash plains and stream terraces
Parent material: Loamy and sandy outwash
Slope range: 0 to 2 percent
Taxonomic classification: Fine-loamy, mixed, mesic Aquic Hapludolls

Typical Pedon for MLRA 95B

Typical pedon of Hoopeston sandy loam, 0 to 2 percent slopes, 1,175 feet south and 2,250 feet west of the northeast corner of sec. 4, T. 43 N., R. 5 E.

Ap—0 to 6 inches; black (10YR 2/1) sandy loam, dark grayish brown (10YR 4/2) dry; moderate fine granular structure; very friable; common very fine roots; neutral; abrupt smooth boundary.

A—6 to 14 inches; black (10YR 2/1) sandy loam, dark grayish brown (10YR 4/2) dry; moderate fine and medium granular structure; very friable; common very fine roots; neutral; abrupt smooth boundary.

BA—14 to 18 inches; brown (10YR 4/3) sandy loam; moderate fine subangular blocky structure; very friable; common very fine roots; few distinct very dark gray (10YR 3/1) organic coatings on faces of peds and in pores; common fine dark reddish brown (5YR 3/4) very weakly cemented iron oxide concretions throughout; common fine faint dark grayish brown (10YR 4/2) iron depletions in the matrix; neutral; clear smooth boundary.

Bw1—18 to 24 inches; brown (10YR 5/3) sandy loam; moderate fine subangular blocky structure; very friable; common very fine roots; common fine yellowish red (5YR 4/6) very weakly cemented iron oxide concretions throughout; common fine and medium faint grayish brown (10YR 5/2) iron depletions in the matrix; slightly alkaline; gradual wavy boundary.

Bw2—24 to 34 inches; grayish brown (10YR 5/2) sandy loam; moderate fine and medium subangular blocky structure; very friable; common very fine and fine roots; common fine dark reddish brown (5YR 3/4) and yellowish red (5YR 4/6) very weakly cemented iron oxide concretions throughout; common fine and medium faint light brownish gray (10YR 6/2) iron depletions in the matrix; slightly alkaline; gradual wavy boundary.

BC—34 to 38 inches; 60 percent grayish brown (10YR 5/2) and 40 percent brown (10YR 5/3) sandy loam; weak fine and medium subangular blocky structure; very friable; few very fine roots; common fine yellowish red (5YR 4/6) very weakly cemented iron oxide concretions throughout; slightly alkaline; clear wavy boundary.

C—38 to 60 inches; 40 percent yellowish brown (10YR 5/4), 30 percent grayish brown (10YR 5/2), and 30 percent yellowish brown (10YR 5/6) loamy sand; massive; very friable; common fine yellowish red (5YR 4/6) and dark reddish brown (5YR 3/3) very weakly cemented iron oxide concretions throughout; slightly alkaline.

MLRA Series Range in Characteristics

Thickness of the mollic epipedon: 10 to 18 inches
Depth to carbonates: Greater than 40 inches
Thickness of the solum: 22 to 48 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 to 3
Texture—sandy loam, fine sandy loam, or loam

Bw horizon:
Hue—10YR or 2.5Y
Value—4 to 6

Chroma—2 to 6
Texture—sandy loam, fine sandy loam, loam, or loamy sand

C horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 8
Texture—loamy sand, sand, loamy fine sand, or fine sand

172A—Hoopeston sandy loam, 0 to 2 percent slopes

Setting

Landform: Outwash plains and stream terraces
Position on the landform: Footslopes
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the "Soil Properties" section in Part II of this publication.

Composition

Hoopeston and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a thinner subsurface layer
- soils that contain more clay or less clay in the subsoil
- soils that contain carbonates at a depth of less than 40 inches

Dissimilar soils:
- the well drained Dickinson soils in the higher positions on the landform
- the poorly drained Selmass soils in depressions and drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- "Agronomy" section
- "Wildlife Habitat" section
- "Engineering" section
- "Soil Properties" section

Hooppole Series

Drainage class: Poorly drained
Permeability: Moderate in the upper part and rapid in the lower part
Landform: Outwash plains and stream terraces
Parent material: Calcareous loamy outwash
Slope range: 0 to 2 percent
Taxonomic classification: Fine-loamy, mixed, calcareous, mesic Typic Endoaquolls

Typical Pedon for MLRA 95B

Typical pedon of Hooppole loam, 0 to 2 percent slopes, 470 feet south and 1,940 feet west of the northeast corner of sec. 18, T. 17 N., R. 6 W.

Apk—0 to 7 inches; black (N 2.5/0) loam, very dark gray (10YR 3/1) dry; moderate medium granular structure; friable; common fine roots; violently effervescent; slightly alkaline; abrupt smooth boundary.
Ak—7 to 12 inches; black (N 2.5/0) loam, black (10YR 2/1) dry; moderate medium granular structure; friable; few fine roots; violently effervescent; slightly alkaline; clear smooth boundary.
A—12 to 17 inches; black (10YR 2/1) loam, very dark grayish brown (10YR 3/2) dry; moderate fine subangular blocky structure parting to moderate medium granular; friable; few fine roots; few fine faint dark grayish brown (10YR 4/2) iron depletions in the matrix; slightly effervescent; slightly alkaline; clear smooth boundary.
BA—17 to 22 inches; dark grayish brown (2.5Y 3/2) loam, dark grayish brown (2.5Y 4/2) dry; moderate fine subangular blocky structure; friable; few fine roots; common prominent black (10YR 2/1) organic coatings on faces of peds; black (10YR 2/1) loamy krotovinas and light brownish gray (10YR 6/2) sandy krotovinas; few fine prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix throughout; few fine faint grayish brown (2.5Y 5/2) iron depletions in the matrix; slightly effervescent; slightly alkaline; clear smooth boundary.
Bg1—22 to 30 inches; dark grayish brown (2.5Y 4/2) loam; moderate medium subangular blocky structure; friable; few fine roots; common distinct very dark gray (10YR 3/1) organic coatings on faces of peds; very dark grayish brown (2.5Y 3/2) loamy krotovinas and light brownish gray (10YR 6/2) sandy krotovinas; common fine prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; few fine faint grayish brown (2.5Y 5/2) iron depletions in the matrix;

slightly effervescent; slightly alkaline; clear smooth boundary.

Bg2—30 to 38 inches; olive gray (5Y 5/2) loam; moderate medium subangular blocky structure; friable; few fine roots; common distinct dark gray (5Y 4/1) coatings on faces of peds; very dark grayish brown (2.5Y 3/2) loamy krotovinas; common fine prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; few fine faint dark gray (5Y 4/1) iron depletions in the matrix; 4 percent gravel; strongly effervescent; slightly alkaline; clear smooth boundary.

2BCg—38 to 44 inches; dark grayish brown (2.5Y 4/2) sandy loam; weak medium subangular blocky structure; friable; few fine roots; common distinct dark gray (5Y 4/1) coatings on faces of peds; black (10YR 2/1) loamy krotovinas; few fine prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; few fine distinct gray (5Y 5/1) iron depletions in the matrix; slightly effervescent; slightly alkaline; clear smooth boundary.

2Cg—44 to 60 inches; very dark gray (5Y 3/1) and grayish brown (2.5Y 5/2) sand; single grain; loose; few fine prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; slightly effervescent; slightly alkaline.

MLRA Series Range in Characteristics

Thickness of the mollic epipedon: 10 to 24 inches
Depth to sandy outwash: 40 to 60 inches
Depth to carbonates: Less than 10 inches
Thickness of the solum: 30 to 50 inches

Apk or A horizon:
Hue—10YR, 2.5Y, or N
Value—2 or 3
Chroma—0 to 2
Texture—loam, silt loam, clay loam, or silty clay loam

Bg or 2BCg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 or 2
Texture—loam, silt loam, clay loam, sandy clay loam, silty clay loam, or sandy loam
Content of gravel—0 to 10 percent

2Cg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 to 3
Texture—sand or loamy sand
Content of gravel—0 to 15 percent

488A—Hooppole loam, 0 to 2 percent slopes

Setting

Landform: Outwash plains and stream terraces
Position on the landform: Footslopes and toeslopes
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Hooppole and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have no subsurface layers and are lighter colored in the upper part of the subsoil
- soils that contain less sand in the upper and middle parts of the profile
- soils that contain more gravel in the lower part of the profile
- soils that do not contain carbonates at or near the surface

Dissimilar soils:
- the somewhat poorly drained Lahoguess soils in the higher positions on the landform
- the very poorly drained Houghton and Lena soils in depressions
- Will soils, which contain sandy and gravelly deposits at a depth of less than 40 inches; in positions on the landform similar to those of the Hooppole soil

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

1488A—Hooppole loam, 0 to 2 percent slopes, undrained

Setting

Landform: Outwash plains and stream terraces
Position on the landform: Depressions
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Hooppole and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have no subsurface layers and are lighter colored in the upper part of the subsoil
- soils that contain less sand in the upper and middle parts of the profile
- soils that contain more gravel in the lower part of the profile
- soils that do not contain carbonates at or near the surface

Dissimilar soils:
- the somewhat poorly drained Lahoguess soils in the higher positions on the landform
- the very poorly drained Houghton and Lena soils in the slightly lower positions on the landform
- Will soils, which contain sandy and gravelly deposits at a depth of less than 40 inches; in positions on the landform similar to those of the Hooppole soil

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Houghton Series

Drainage class: Very poorly drained
Permeability: Moderate
Landform: Moraines, outwash plains, and stream terraces
Parent material: Organic deposits
Slope range: 0 to 2 percent
Taxonomic classification: Euic, mesic Typic Medisaprists

Typical Pedon for MLRA 95B

Typical pedon of Houghton muck, 0 to 2 percent slopes, undrained, 2,000 feet south and 1,500 feet west of the northeast corner of sec. 6, T. 44 N., R. 9 E.

Oa1—0 to 2 inches; sapric material, black (N 2.5/0) broken face and rubbed, dark gray (10YR 4/1) dry; about 60 percent fiber, less than 15 percent rubbed; weak fine granular structure; very friable; many very fine to medium roots; neutral; abrupt smooth boundary.

Oa2—2 to 7 inches; sapric material, black (N 2.5/0) broken face and rubbed; about 45 percent fiber, less than 5 percent rubbed; moderate fine granular structure; very friable; many very fine and fine roots; neutral; abrupt smooth boundary.

Oa3—7 to 17 inches; sapric material, black (N 2.5/0) broken face and rubbed; about 10 percent fiber, less than 2 percent rubbed; weak medium subangular blocky structure; very friable; many very fine roots; neutral; gradual smooth boundary.

Oa4—17 to 60 inches; sapric material, 85 percent black (N 2.5/0) and 15 percent very dark brown (7.5YR 2.5/2) broken face and rubbed; about 3 percent fiber, less than 1 percent rubbed; massive; very friable; common very fine roots; neutral.

MLRA Series Range in Characteristics

Thickness of organic deposits: Greater than 51 inches

Surface tier:
Hue—10YR or N
Value—2 or 3
Chroma—0 or 1

Subsurface tier:
Hue—7.5YR, 10YR, or N
Value—2 or 3
Chroma—0 to 2

103A—Houghton muck, 0 to 2 percent slopes

Setting

Landform: Moraines, outwash plains, and stream terraces
Position on the landform: Depressions
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Houghton and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
• soils in which the surface layer has a lower content of organic matter
• soils that contain carbonates at or near the surface
• soils that have organic deposits less than 51 inches thick

Dissimilar soils:
• the poorly drained Drummer, Dunham, Pella, and Selmass soils in the slightly higher positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

1103A—Houghton muck, 0 to 2 percent slopes, undrained

Setting

Landform: Moraines, outwash plains, and stream terraces
Position on the landform: Depressions
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Houghton and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
• soils in which the surface layer has a lower content of organic matter
• soils that contain carbonates at or near the surface
• soils that have organic deposits less than 51 inches thick

Dissimilar soils:
• the poorly drained Drummer, Dunham, Pella, and Selmass soils in the slightly higher positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

4103A—Houghton muck, 0 to 2 percent slopes, ponded

Setting

Landform: Moraines, outwash plains, and stream terraces
Position on the landform: Depressions (fig. 2)
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Houghton and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
• soils in which the surface layer has a lower content of organic matter
• soils that contain carbonates at or near the surface
• soils that have organic deposits less than 51 inches thick

Dissimilar soils:
• the poorly drained Drummer, Dunham, Pella, and Selmass soils in the slightly higher positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Kane Series

Drainage class: Somewhat poorly drained
Permeability: Moderate in the upper part and very rapid in the lower part
Landform: Outwash plains, stream terraces, and kames

Figure 2.—An area of Houghton muck, 0 to 2 percent slopes, ponded, supports hydrophytic vegetation, such as cattails, and provides habitat for wetland wildlife.

Parent material: Loamy drift over sandy and gravelly deposits
Slope range: 0 to 2 percent
Taxonomic classification: Fine-loamy over sandy or sandy-skeletal, mixed, mesic Aquic Argiudolls

Typical Pedon for MLRA 95B

Typical pedon of Kane silt loam, 0 to 2 percent slopes, 520 feet north and 1,645 feet east of the southwest corner of sec. 27, T. 46 N., R. 8 E.

Ap—0 to 5 inches; black (10YR 2/1) silt loam, dark gray (10YR 4/1) dry; weak fine and medium granular structure; friable; common very fine roots; common distinct black (N 2.5/0) organic coatings on faces of peds and in pores; neutral; clear smooth boundary.

A—5 to 12 inches; black (10YR 2/1) silty clay loam, dark grayish brown (10YR 4/2) dry; moderate fine and medium subangular blocky structure parting to weak fine granular; friable; common very fine roots; few distinct black (N 2.5/0) organic coatings on faces of peds and in pores; 1 percent gravel; neutral; abrupt smooth boundary.

Bt1—12 to 16 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium subangular blocky structure; friable; common very fine roots; common distinct dark grayish brown (2.5Y 4/2) clay films on faces of peds and in pores; few distinct black (10YR 2/1) organo-clay films on faces of peds and in pores; common fine and medium strong brown (7.5YR 4/6) very weakly cemented iron oxide concretions throughout; 1 percent gravel; neutral; clear smooth boundary.

2Bt2—16 to 22 inches; dark yellowish brown (10YR 4/4) clay loam; moderate medium subangular

blocky structure; firm; common very fine roots; common distinct brown (10YR 4/3) and few distinct dark grayish brown (10YR 4/2) clay films on faces of peds and in pores; few distinct black (10YR 2/1) organo-clay films in root channels and in pores; common fine prominent yellowish brown (10YR 5/8) masses of iron accumulation in the matrix; common fine distinct grayish brown (10YR 5/2) iron depletions in the matrix; 8 percent gravel; neutral; clear smooth boundary.

2Bt3—22 to 29 inches; brown (7.5YR 4/4) sandy clay loam; weak fine and medium subangular blocky structure; friable; common very fine roots; few distinct very dark gray (7.5YR 3/1) organo-clay films on faces of peds and in pores; few distinct black (10YR 2/1) organo-clay films in root channels and in pores; common fine prominent yellowish brown (10YR 5/8) masses of iron accumulation in the matrix; 14 percent gravel; slightly effervescent on rock fragments; neutral; clear wavy boundary.

3C—29 to 60 inches; yellowish brown (10YR 5/4 and 5/6) very gravelly sand and very gravelly loamy sand; single grain; loose; few very fine roots; 40 percent gravel; strongly effervescent; slightly alkaline.

MLRA Series Range in Characteristics

Thickness of the mollic epipedon: 10 to 18 inches
Depth to sandy and gravelly deposits: 20 to 40 inches
Depth to carbonates: 20 to 40 inches
Thickness of the solum: 22 to 40 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—silt loam, loam, or silty clay loam

Bt or 2Bt horizon:
Hue—7.5YR, 10YR, or 2.5Y
Value—4 to 6
Chroma—2 to 6
Texture—silty clay loam, clay loam, loam, sandy clay loam, or sandy loam

3C horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 6
Texture—the gravelly, very gravelly, or extremely gravelly analogs of sand, loamy sand, coarse sand, or loamy coarse sand
Content of gravel—20 to 70 percent

343A—Kane silt loam, 0 to 2 percent slopes

Setting

Landform: Outwash plains, stream terraces, and kames
Position on the landform: Footslopes
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Kane and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a thinner subsurface layer
- soils that contain sandy and gravelly deposits at a depth of more than 40 inches or less than 20 inches
- soils that contain less sand and more silt in the subsoil

Dissimilar soils:
- the well drained Dresden and Warsaw soils in the higher positions on the landform
- the poorly drained Will soils in depressions and drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Kidami Series

Drainage class: Moderately well drained
Permeability: Moderate in the upper part and moderately slow in the lower part
Landform: Moraines and till plains
Parent material: Thin mantle of silty material and the underlying loamy till
Slope range: 2 to 12 percent
Taxonomic classification: Fine-loamy, mixed, mesic Oxyaquic Hapludalfs

Typical Pedon for MLRA 95B

Typical pedon of Kidami silt loam, 2 to 4 percent slopes, 1,500 feet north and 1,980 feet east of the southwest corner of sec. 13, T. 44 N., R. 5 E.

A—0 to 3 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; weak fine subangular blocky structure parting to weak fine granular; friable; common fine and medium roots; 2 percent gravel; neutral; abrupt smooth boundary.

E—3 to 7 inches; brown (10YR 5/3) silt loam; weak thin platy structure parting to weak fine subangular blocky; very friable; common fine roots; few distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds and in pores; common distinct light gray (10YR 7/2 dry) clay depletions on faces of peds and in pores; 1 percent gravel; slightly acid; abrupt smooth boundary.

BE—7 to 10 inches; 50 percent brown (10YR 5/3) and 50 percent brown (7.5YR 5/4) silt loam; moderate fine subangular blocky structure; friable; common fine roots; few distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds and in pores; common distinct light gray (10YR 7/2 dry) clay depletions on faces of peds and in pores; 2 percent gravel; moderately acid; clear smooth boundary.

2Bt1—10 to 16 inches; brown (7.5YR 5/4) loam; moderate fine subangular blocky structure; firm; common very fine and fine roots; few distinct brown (7.5YR 4/4) clay films and light gray (10YR 7/2 dry) clay depletions on faces of peds and in pores; 3 percent gravel; strongly acid; clear wavy boundary.

2Bt2—16 to 24 inches; brown (7.5YR 4/4) clay loam; moderate fine prismatic structure parting to moderate fine subangular blocky; firm; common very fine and fine roots; few distinct brown (7.5YR 4/3) clay films and light gray (10YR 7/2 dry) clay depletions on faces of peds and in pores; 3 percent gravel; strongly acid; clear smooth boundary.

2Bt3—24 to 30 inches; strong brown (7.5YR 4/6) clay loam; moderate medium prismatic structure parting to moderate fine and medium subangular blocky; firm; few very fine roots; few distinct brown (7.5YR 4/3 and 4/4) clay films on faces of peds and in pores; 5 percent gravel; moderately acid; clear wavy boundary.

2Bt4—30 to 37 inches; brown (7.5YR 4/4) clay loam; moderate medium subangular blocky structure; firm; few very fine and fine roots; few distinct brown (7.5YR 4/3) clay films on faces of peds and in pores; 6 percent gravel; slightly effervescent; slightly alkaline; gradual wavy boundary.

2Bt5—37 to 45 inches; brown (7.5YR 5/4) loam; weak medium and coarse subangular blocky structure; firm; few very fine roots; few distinct brown (7.5YR 4/3) clay films on faces of peds and in pores; 7 percent gravel; slightly effervescent; slightly alkaline; gradual wavy boundary.

2C—45 to 60 inches; brown (7.5YR 5/4) loam; massive; firm; few very fine roots; few distinct brown (7.5YR 4/3) clay films in root channels and in pores; 8 percent gravel; strongly effervescent; moderately alkaline.

MLRA Series Range in Characteristics

Thickness of silty material: Less than 18 inches
Depth to carbonates: 20 to 48 inches
Thickness of the solum: 24 to 55 inches

Ap or A horizon:
Hue—7.5YR or 10YR
Value—2 to 4 (4 to 6 dry)
Chroma—1 to 3
Texture—silt loam, loam, fine sandy loam, or clay loam

E horizon (if it occurs):
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—2 to 4
Texture—silt loam, loam, or sandy loam

2Bt horizon:
Hue—5YR, 7.5YR, or 10YR
Value—4 to 6
Chroma—3 to 6
Texture—clay loam or loam

2C horizon:
Hue—5YR, 7.5YR, or 10YR
Value—4 to 6
Chroma—3 to 6
Texture—loam or sandy loam
Content of gravel—less than 15 percent

527B—Kidami silt loam, 2 to 4 percent slopes

Setting

Landform: Moraines and till plains
Position on the landform: Summits, shoulders, and backslopes
Slope range: 2 to 4 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Kidami and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that are moderately eroded
- soils that have a darker and thicker surface layer
- soils that have a seasonal high water table at a depth of more than 3.5 feet
- soils that contain carbonates at a depth of less than 20 inches or more than 48 inches

Dissimilar soils:
- the somewhat poorly drained Herbert and Lisbon soils in the lower positions on the landform
- the poorly drained Pella soils in drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

527C—Kidami silt loam, 4 to 6 percent slopes

Setting

Landform: Moraines and till plains
Position on the landform: Summits, shoulders, and backslopes
Slope range: 4 to 6 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Kidami and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that are moderately eroded
- soils that have a seasonal high water table at a depth of more than 3.5 feet
- soils that contain carbonates at a depth of less than 20 inches or more than 48 inches
- soils that have slopes of less than 4 percent or more than 6 percent
- soils that have a darker and thicker surface layer

Dissimilar soils:
- the somewhat poorly drained Herbert and Lisbon soils in the lower positions on the landform
- the poorly drained Pella soils in drainageways
- Fox soils, which contain sandy and gravelly deposits at a depth of less than 40 inches; in the lower positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

527C2—Kidami loam, 4 to 6 percent slopes, eroded

Setting

Landform: Moraines and till plains
Position on the landform: Summits, shoulders, and backslopes
Slope range: 4 to 6 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Kidami and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a seasonal high water table at a depth of more than 3.5 feet
- soils that contain carbonates at a depth of less than 20 inches or more than 48 inches

• soils that have slopes of less than 4 percent or more than 6 percent
• soils that are severely eroded

Dissimilar soils:
• the somewhat poorly drained Herbert and Lisbon soils in the lower positions on the landform
• the poorly drained Pella soils in drainageways
• Fox soils, which contain sandy and gravelly deposits at a depth of less than 40 inches; in the lower positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

• "Agronomy" section
• "Forestland" section
• "Wildlife Habitat" section
• "Engineering" section
• "Soil Properties" section

527D—Kidami silt loam, 6 to 12 percent slopes

Setting

Landform: Moraines and till plains
Position on the landform: Backslopes
Slope range: 6 to 12 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the "Soil Properties" section in Part II of this publication.

Composition

Kidami and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
• soils that are moderately eroded
• soils that have a darker and thicker surface layer
• soils that have a seasonal high water table at a depth of more than 3.5 feet
• soils that contain carbonates at a depth of less than 20 inches or more than 48 inches
• soils that have slopes of less than 6 percent or more than 12 percent

Dissimilar soils:
• the somewhat poorly drained Herbert and Lisbon soils in the lower positions on the landform
• the poorly drained Pella soils in drainageways
• Fox soils, which contain sandy and gravelly deposits at a depth of less than 40 inches; in the lower positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

• "Agronomy" section
• "Forestland" section
• "Wildlife Habitat" section
• "Engineering" section
• "Soil Properties" section

527D2—Kidami loam, 6 to 12 percent slopes, eroded

Setting

Landform: Moraines and till plains
Position on the landform: Backslopes
Slope range: 6 to 12 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the "Soil Properties" section in Part II of this publication.

Composition

Kidami and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
• soils that contain carbonates at a depth of less than 20 inches or more than 48 inches
• soils that are severely eroded
• soils that have slopes of less than 6 percent or more than 12 percent
• soils that have a seasonal high water table at a depth of more than 3.5 feet

Dissimilar soils:
• the somewhat poorly drained Herbert and Lisbon soils in the lower positions on the landform
• the poorly drained Pella soils in drainageways
• Fox soils, which contain sandy and gravelly deposits at a depth of less than 40 inches; in the lower positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

527D3—Kidami clay loam, 6 to 12 percent slopes, severely eroded

Setting

Landform: Moraines and till plains
Position on the landform: Backslopes
Slope range: 6 to 12 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Kidami and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that are moderately eroded
- soils that have slopes of less than 6 percent or more than 12 percent
- soils that have carbonates at a depth of less than 20 inches
- soils that have a seasonal high water table at a depth of more than 3.5 feet

Dissimilar soils:
- calcareous soils in positions on the landform similar to those of the Kidami soil
- the somewhat poorly drained Herbert and Lisbon soils in the lower positions on the landform
- the poorly drained Pella soils in drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Kidder Series

Drainage class: Well drained
Permeability: Moderate in the upper part and moderately rapid in the lower part
Landform: Moraines
Parent material: Loamy till
Slope range: 2 to 30 percent
Taxonomic classification: Fine-loamy, mixed, mesic Typic Hapludalfs

Typical Pedon for MLRA 95B

Typical pedon of Kidder silt loam, 2 to 6 percent slopes, 2,500 feet south and 185 feet west of the northeast corner of sec. 1, T. 4 N., R. 13 E.

Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) silt loam, light brownish gray (10YR 6/2) dry; moderate fine and very fine subangular blocky structure; friable; common fine roots; common fine and medium, continuous, mostly exped dendritic pores; neutral; abrupt smooth boundary.

BE—7 to 11 inches; 60 percent brown (10YR 4/3) and 40 percent brown (7.5YR 4/4) loam; weak fine and medium subangular blocky structure; friable; common fine roots; common very fine and fine and few medium, continuous, mostly exped dendritic pores; neutral; clear smooth boundary.

Bt1—11 to 17 inches; brown (7.5YR 4/4) clay loam; moderate fine and medium subangular blocky structure; firm; few fine roots; common fine and very fine and few medium, continuous, mostly exped dendritic pores; few faint brown (7.5YR 4/3) clay films on faces of peds and in pores and clay bridging of sand grains; neutral; clear wavy boundary.

Bt2—17 to 28 inches; brown (7.5YR 4/4) sandy clay loam; moderate medium subangular blocky structure; firm; few fine roots; common fine and very fine, continuous, mostly exped dendritic pores; few faint brown (7.5YR 4/3) clay films on faces of peds and in pores and clay bridging of sand grains; neutral; clear wavy boundary.

Bt3—28 to 30 inches; dark yellowish brown (10YR 3/4) sandy loam; weak medium subangular blocky structure; friable; few fine and very fine, continuous, obliquely oriented, inped and exped pores; very few faint dark brown (10YR 3/3) clay films on faces of some peds and clay bridging of sand grains; 14 percent gravel; slightly alkaline; clear wavy boundary.

C—30 to 60 inches; brown (10YR 5/3) gravelly sandy loam; massive; friable; few fine and very fine continuous, obliquely oriented pores; 34 percent gravel; strongly effervescent; slightly alkaline.

MLRA Series Range in Characteristics

Depth to carbonates: 16 to 32 inches
Thickness of the solum: 20 to 40 inches

Ap or A horizon:
Hue—10YR
Value—3 or 4 (5 or 6 dry)
Chroma—2 or 3
Texture—loam, silt loam, or clay loam

E horizon (if it occurs):
Hue—10YR
Value—4 or 5
Chroma—2 or 3
Texture—loam, sandy loam, or silt loam

Bt horizon:
Hue—10YR or 7.5YR
Value—3 or 4
Chroma—3 or 4
Texture—clay loam, loam, sandy clay loam, or sandy loam

C horizon:
Hue—10YR
Value—5 or 6
Chroma—3 to 6
Texture—sandy loam or gravelly sandy loam
Content of gravel—10 to 35 percent

361B—Kidder loam, 2 to 4 percent slopes

Setting

Landform: Moraines
Position on the landform: Summits, shoulders, and backslopes
Slope range: 2 to 4 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the "Soil Properties" section in Part II of this publication.

Composition

Kidder and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a darker surface layer
- soils that are moderately eroded
- soils that contain less sand and more silt in the upper part of the subsoil
- soils that contain more clay in the lower part of the profile

Dissimilar soils:
- the somewhat poorly drained Elburn and Virgil soils in the lower positions on the landform
- the poorly drained Pella soils in drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- "Agronomy" section
- "Forestland" section
- "Wildlife Habitat" section
- "Engineering" section
- "Soil Properties" section

361C—Kidder loam, 4 to 6 percent slopes

Setting

Landform: Moraines
Position on the landform: Summits, shoulders, and backslopes
Slope range: 4 to 6 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the "Soil Properties" section in Part II of this publication.

Composition

Kidder and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that are moderately eroded
- soils that have slopes of less than 4 percent or more than 6 percent
- soils that contain less sand and more silt in the upper part of the subsoil
- soils that contain more clay in the lower part of the profile

Dissimilar soils:
- the somewhat poorly drained Elburn and Virgil soils in the lower positions on the landform
- the poorly drained Pella soils in drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- "Agronomy" section
- "Forestland" section
- "Wildlife Habitat" section
- "Engineering" section
- "Soil Properties" section

361C2—Kidder loam, 4 to 6 percent slopes, eroded

Setting

Landform: Moraines
Position on the landform: Summits, shoulders, and backslopes
Slope range: 4 to 6 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Kidder and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that are severely eroded
- soils that have slopes of less than 4 percent or more than 6 percent
- soils that contain more clay in the lower part of the profile

Dissimilar soils:
- the somewhat poorly drained Elburn and Virgil soils in the lower positions on the landform
- the poorly drained Pella soils in drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

361C3—Kidder clay loam, 4 to 6 percent slopes, severely eroded

Setting

Landform: Moraines
Position on the landform: Backslopes and shoulders
Slope range: 4 to 6 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Kidder and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that are moderately eroded
- soils that have slopes of less than 4 percent or more than 6 percent
- soils that contain more clay in the lower part of the profile

Dissimilar soils:
- the somewhat poorly drained Elburn and Virgil soils in the lower positions on the landform
- the poorly drained Pella soils in drainageways
- calcareous soils in positions on the landform similar to those of the Kidder soil

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

361D2—Kidder loam, 6 to 12 percent slopes, eroded

Setting

Landform: Moraines
Position on the landform: Backslopes
Slope range: 6 to 12 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Kidder and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that are severely eroded

- soils that have slopes of less than 6 percent or more than 12 percent
- soils that contain more clay in the lower part of the profile

Dissimilar soils:
- the somewhat poorly drained Elburn and Virgil soils in the lower positions on the landform
- calcareous soils in positions on the landform similar to those of the Kidder soil
- the poorly drained Pella soils in drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

361D3—Kidder clay loam, 6 to 12 percent slopes, severely eroded

Setting

Landform: Moraines
Position on the landform: Backslopes
Slope range: 6 to 12 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Kidder and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that are moderately eroded
- soils that have slopes of less than 6 percent or more than 12 percent
- soils that contain more clay in the lower part of the profile

Dissimilar soils:
- the somewhat poorly drained Elburn and Virgil soils in the lower positions on the landform
- the poorly drained Pella soils in drainageways
- calcareous soils in positions on the landform similar to those of the Kidder soil

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

361E—Kidder loam, 12 to 20 percent slopes

Setting

Landform: Moraines
Position on the landform: Backslopes
Slope range: 12 to 20 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Kidder and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that are moderately eroded
- soils that have slopes of less than 12 percent or more than 20 percent
- soils that contain more clay in the lower part of the profile

Dissimilar soils:
- the somewhat poorly drained Elburn and Virgil soils in the lower positions on the landform
- the poorly drained Pella soils in drainageways
- calcareous soils in positions on the landform similar to those of the Kidder soil

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

361E2—Kidder loam, 12 to 20 percent slopes, eroded

Setting

Landform: Moraines
Position on the landform: Backslopes
Slope range: 12 to 20 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the "Soil Properties" section in Part II of this publication.

Composition

Kidder and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that are severely eroded
- soils that have slopes of less than 12 percent or more than 20 percent
- soils that contain more clay in the lower part of the profile

Dissimilar soils:
- the somewhat poorly drained Elburn and Virgil soils in the lower positions on the landform
- the poorly drained Pella soils in drainageways
- calcareous soils in positions on the landform similar to those of the Kidder soil

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- "Agronomy" section
- "Forestland" section
- "Wildlife Habitat" section
- "Engineering" section
- "Soil Properties" section

361F—Kidder silt loam, 20 to 30 percent slopes

Setting

Landform: Moraines
Position on the landform: Backslopes
Slope range: 20 to 30 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the "Soil Properties" section in Part II of this publication.

Composition

Kidder and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that are moderately eroded
- soils that have slopes of less than 20 percent or more than 30 percent
- soils that contain more clay in the lower part of the profile

Dissimilar soils:
- the somewhat poorly drained Elburn and Virgil soils in the lower positions on the landform
- the poorly drained Pella soils in drainageways
- calcareous soils in positions on the landform similar to those of the Kidder soil

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- "Forestland" section
- "Wildlife Habitat" section
- "Engineering" section
- "Soil Properties" section

Kish Series

Drainage class: Poorly drained
Permeability: Moderate
Landform: Outwash plains, stream terraces, and moraines
Parent material: Calcareous loamy outwash
Slope range: 0 to 2 percent
Taxonomic classification: Fine-loamy, mixed, calcareous, mesic Typic Endoaquolls

Typical Pedon for MLRA 95B

Typical pedon of Kish loam, 0 to 2 percent slopes, 2,025 feet south and 120 feet east of the northwest corner of sec. 29, T. 43 N., R. 7 E.

Apk—0 to 6 inches; black (10YR 2/1) loam, dark grayish brown (10YR 4/2) dry; moderate medium granular structure; friable; common very fine roots; strongly effervescent; slightly alkaline; clear smooth boundary.

Ak—6 to 11 inches; black (10YR 2/1) loam, dark gray (10YR 4/1) dry; weak fine and medium subangular blocky structure parting to weak fine granular;

friable; common very fine roots; 1 percent gravel; strongly effervescent; slightly alkaline; clear smooth boundary.

Bg1—11 to 21 inches; dark gray (2.5Y 4/1) loam; weak fine and medium subangular blocky structure; friable; few very fine roots; common fine prominent yellowish brown (10YR 5/4) masses of iron accumulation throughout; common fine and medium faint grayish brown (2.5Y 5/2) iron depletions throughout; 1 percent gravel; slightly effervescent; slightly alkaline; gradual wavy boundary.

Bg2—21 to 30 inches; dark gray (2.5Y 4/1) loam; weak medium subangular blocky structure; friable; few very fine roots; common fine strong brown (7.5YR 4/6) very weakly cemented iron oxide concretions throughout; black (2.5Y 2.5/1) krotovina; many medium and coarse faint dark grayish brown (2.5Y 4/2) and gray (2.5Y 5/1) iron depletions throughout; common fine and medium distinct light olive brown (2.5Y 5/4) masses of iron accumulation throughout; 4 percent gravel; slightly effervescent; slightly alkaline; gradual wavy boundary.

Bg3—30 to 38 inches; grayish brown (2.5Y 5/2) loam; weak medium subangular blocky structure; friable; few very fine roots; many fine and medium prominent yellowish brown (10YR 5/6) masses of iron accumulation throughout; 4 percent gravel; strongly effervescent; slightly alkaline; gradual wavy boundary.

BCg—38 to 47 inches; light brownish gray (2.5Y 6/2) loam; weak medium and coarse subangular blocky structure; friable; many medium and coarse prominent dark yellowish brown (10YR 4/6) masses of iron accumulation throughout; 7 percent gravel; strongly effervescent; slightly alkaline; clear wavy boundary.

Cg—47 to 60 inches; 45 percent light brownish gray (2.5Y 6/2), 40 percent brown (7.5YR 5/3), and 15 percent grayish brown (2.5Y 5/2), stratified loam, sandy loam, and loamy coarse sand; massive; very friable; 14 percent gravel; violently effervescent; moderately alkaline.

MLRA Series Range in Characteristics

Thickness of the mollic epipedon: 10 to 20 inches
Depth to carbonates: Less than 10 inches
Thickness of the solum: 30 to 50 inches

Ap or A horizon:
Hue—10YR, 2.5Y, or N
Value—2 or 3
Chroma—0 to 2
Texture—loam, silt loam, clay loam, or silty clay loam

Bg or BCg horizon:
Hue—10YR, 2.5Y, 5Y, or N
Value—4 to 6
Chroma—0 to 2
Texture—loam, silt loam, clay loam, sandy clay loam, silty clay loam, or sandy loam
Content of gravel—0 to 10 percent

Cg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 to 3
Texture—loam, silt loam, or sandy loam with strata of coarser textures
Content of gravel—2 to 15 percent

626A—Kish loam, 0 to 2 percent slopes

Setting

Landform: Outwash plains, stream terraces, and moraines
Position on the landform: Footslopes and toeslopes
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Kish and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a thinner subsurface layer
- soils that contain less sand and more silt in the upper and middle parts of the profile
- soils that contain more gravel in the lower part of the profile
- soils that contain sandy outwash in the lower part of the profile
- soils that do not contain carbonates at or near the surface

Dissimilar soils:
- the somewhat poorly drained Brenton soils in the higher positions on the landform
- the very poorly drained Houghton and Lena soils in depressions

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

1626A—Kish loam, 0 to 2 percent slopes, undrained

Setting

Landform: Outwash plains, stream terraces, and moraines
Position on the landform: Depressions
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Kish and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a thinner subsurface layer
- soils that contain less sand and more silt in the upper and middle parts of the profile
- soils that contain more gravel in the lower part of the profile
- soils that contain sandy outwash in the lower part of the profile
- soils that do not contain carbonates at or near the surface

Dissimilar soils:
- the somewhat poorly drained Brenton soils in the higher positions on the landform
- the very poorly drained Houghton and Lena soils in the slightly lower positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Lahoguess Series

Drainage class: Somewhat poorly drained
Permeability: Moderate in the upper part and rapid in the lower part
Landform: Outwash plains and stream terraces
Parent material: Loamy outwash
Slope range: 0 to 2 percent
Taxonomic classification: Fine-loamy, mixed, mesic Aquic Argiudolls

Typical Pedon for MLRA 95B

Typical pedon of Lahoguess loam, 0 to 2 percent slopes, 591 feet north and 951 feet east of the southwest corner of sec. 23, T. 44 N., R. 6 E.

Ap—0 to 9 inches; black (10YR 2/1) loam, dark gray (10YR 4/1) dry; moderate fine and medium granular structure; friable; common very fine roots; slightly acid; clear smooth boundary.

A—9 to 14 inches; very dark brown (10YR 2/2) loam, dark grayish brown (10YR 4/2) dry; moderate fine and medium subangular blocky structure parting to moderate fine granular; friable; common very fine roots; few distinct black (10YR 2/1) organic coatings on faces of peds; neutral; clear smooth boundary.

AB—14 to 18 inches; very dark grayish brown (10YR 3/2) clay loam, brown (10YR 5/3) dry; moderate fine and medium subangular blocky structure; friable; common very fine roots; few distinct black (10YR 2/1) organic coatings on faces of peds; neutral; clear smooth boundary.

Bt1—18 to 29 inches; olive brown (2.5Y 4/4) clay loam; weak medium prismatic structure parting to moderate fine and medium subangular blocky; friable; common very fine roots; few distinct olive brown (2.5Y 4/3) and dark grayish brown (2.5Y 4/2) clay films on faces of peds; few distinct very dark grayish brown (2.5Y 3/2) organo-clay films on faces of peds; common fine prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; 1 percent gravel; neutral; clear smooth boundary.

Bt2—29 to 38 inches; light olive brown (2.5Y 5/4) clay loam; moderate medium subangular blocky structure; friable; common very fine roots; few distinct olive brown (2.5Y 4/3) clay films on faces of peds; common medium dark gray (10YR 4/1) and very dark gray (10YR 3/1) krotovinas; common fine and medium prominent yellowish brown (10YR 5/6) and strong brown (7.5YR 4/6) masses of iron accumulation in the matrix; many fine and medium distinct light brownish gray (2.5Y

6/2) iron depletions in the matrix; 2 percent gravel; neutral; clear wavy boundary.

BCg—38 to 46 inches; grayish brown (2.5Y 5/2) sandy loam; weak medium subangular blocky structure; friable; common very fine roots; common medium dark gray (10YR 4/1) and very dark gray (10YR 3/1) krotovinas; common fine and medium prominent brownish yellow (10YR 6/6) masses of iron accumulation in the matrix; many fine and medium faint light brownish gray (2.5Y 6/2) iron depletions in the matrix; 2 percent gravel; neutral; abrupt smooth boundary.

2C—46 to 60 inches; 60 percent light olive brown (2.5Y 5/3) and 40 percent light yellowish brown (2.5Y 6/3), stratified loamy sand and sand; single grain; loose; 1 percent gravel; slightly alkaline.

MLRA Series Range in Characteristics

Thickness of the mollic epipedon: 10 to 20 inches
Depth to sandy outwash: 35 to 55 inches
Thickness of the solum: 35 to 55 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 to 3
Texture—loam or silt loam

Bt horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 6
Texture—clay loam, loam, sandy clay loam, or sandy loam

2C horizon:
Hue—7.5YR, 10YR, or 2.5Y
Value—4 to 6
Chroma—2 to 8
Texture—sand or loamy sand
Content of gravel—0 to 15 percent

528A—Lahoguess loam, 0 to 2 percent slopes

Setting

Landform: Outwash plains and stream terraces
Position on the landform: Footslopes
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Lahoguess and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that contain less sand and more silt in the upper and middle parts of the profile
- soils that have sandy outwash at a depth of less than 35 inches
- soils that have no subsurface layers
- soils that contain less clay in the upper and middle parts of the profile

Dissimilar soils:
- the well drained Dakota soils in the higher positions on the landform
- the poorly drained Selmass soils in depressions and drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

La Rose Series

Drainage class: Well drained
Permeability: Moderate in the upper part and moderately slow in the lower part
Landform: Moraines and till plains
Parent material: Loamy till
Slope range: 5 to 10 percent
Taxonomic classification: Fine-loamy, mixed, mesic Typic Argiudolls

Typical Pedon for MLRA 95B

Typical pedon of La Rose loam, 5 to 10 percent slopes, eroded, 2,440 feet north and 2,200 feet west of the southeast corner of sec. 23, T. 44 N., R. 6 E.

Ap—0 to 7 inches; 97 percent very dark grayish brown (10YR 3/2) and 3 percent dark brown (7.5YR 3/4) loam, brown (10YR 5/3) dry; weak medium subangular blocky structure parting to weak fine and medium granular; friable; common very fine roots; 2 percent gravel; neutral; abrupt smooth boundary.

BA—7 to 11 inches; 75 percent dark brown (7.5YR 3/4) and 25 percent very dark grayish brown (10YR 3/2) clay loam; weak medium subangular

blocky structure; firm; common very fine roots; 2 percent gravel; neutral; abrupt smooth boundary.

Bt1—11 to 15 inches; brown (7.5YR 4/4) clay loam; moderate medium subangular blocky structure; friable; common very fine roots; common distinct dark brown (7.5YR 3/4) clay films on faces of peds; very few distinct dark brown (7.5YR 3/2) organic coatings in root channels and in pores; 2 percent gravel; slightly effervescent; slightly alkaline; clear smooth boundary.

Bt2—15 to 21 inches; brown (7.5YR 4/4) clay loam; weak medium subangular blocky structure; friable; common very fine roots; few distinct dark brown (7.5YR 3/4) clay films on faces of peds; very few distinct dark brown (7.5YR 3/2) organic coatings in root channels and in pores; 3 percent gravel; strongly effervescent; slightly alkaline; gradual smooth boundary.

C—21 to 60 inches; brown (7.5YR 5/4) loam; massive; friable; common very fine roots; 4 percent gravel; violently effervescent; moderately alkaline.

MLRA Series Range in Characteristics

Thickness of the mollic epipedon: 7 to 12 inches
Depth to carbonates: 10 to 24 inches
Thickness of the solum: 10 to 24 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—2 or 3
Texture—loam or silt loam

Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 or 4
Texture—clay loam

C horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 or 4
Texture—loam

60C2—La Rose loam, 5 to 10 percent slopes, eroded

Setting

Landform: Moraines and till plains
Position on the landform: Summits, shoulders, and backslopes
Slope range: 5 to 10 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

La Rose and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a lighter colored surface layer
- soils that contain carbonates at a depth of less than 10 inches or more than 24 inches
- soils that have slopes of less than 5 percent or more than 10 percent

Dissimilar soils:
- the somewhat poorly drained Lisbon soils in the lower positions on the landform
- the poorly drained Pella soils in drainageways
- the clayey Varna soils in positions on the landform similar to those of the La Rose soil

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Lena Series

Drainage class: Very poorly drained
Permeability: Moderately rapid
Landform: Moraines, outwash plains, and stream terraces
Parent material: Organic deposits
Slope range: 0 to 2 percent
Taxonomic classification: Euic, mesic Typic Medisaprists

Typical Pedon for MLRA 95B

Typical pedon of Lena muck, 0 to 2 percent slopes, undrained, 300 feet north and 1,400 feet west of the southeast corner of sec. 31, T. 45 N., R. 6 E.

Oa1—0 to 11 inches; sapric material, black (N 2.5/0) broken face and rubbed, black (10YR 2/1) dry; about 10 percent fiber, less than 2 percent rubbed; weak medium subangular blocky structure parting to weak medium granular; very friable; many very fine roots; 2 percent fine snail-shell fragments;

violently effervescent; moderately alkaline; gradual smooth boundary.

Oa2—11 to 27 inches; sapric material, 50 percent black (N 2.5/0) and 50 percent black (10YR 2/1) broken face and rubbed; about 20 percent fiber, less than 2 percent rubbed; weak medium subangular blocky structure; friable; common very fine roots; 1 percent fine snail-shell fragments; slightly effervescent; slightly alkaline; gradual smooth boundary.

Oa3—27 to 60 inches; sapric material, black (N 2.5/0) broken face and rubbed; about 5 percent fiber, less than 1 percent rubbed; massive; very friable; common very fine roots; 1 percent fine snail-shell fragments; slightly effervescent; slightly alkaline.

MLRA Series Range in Characteristics

Thickness of organic deposits: Greater than 51 inches
Depth to carbonates: Less than 10 inches

Surface tier:
Hue—10YR or N
Value—2 or 3
Chroma—0 or 1

Subsurface tier:
Hue—7.5YR, 10YR, or N
Value—2 or 3
Chroma—0 to 2

210A—Lena muck, 0 to 2 percent slopes

Setting

Landform: Moraines, outwash plains, and stream terraces
Position on the landform: Depressions
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Lena and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have organic deposits less than 51 inches thick
- soils that do not contain carbonates at or near the surface
- soils in which the surface layer has a lower content of organic matter

Dissimilar soils:
- the poorly drained Harpster, Hooppole, Kish, Pella, Selmass, and Will soils in the slightly higher positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

1210A—Lena muck, 0 to 2 percent slopes, undrained

Setting

Landform: Moraines, outwash plains, and stream terraces
Position on the landform: Depressions
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Lena and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have organic deposits less than 51 inches thick
- soils that do not contain carbonates at or near the surface
- soils in which the surface layer has a lower content of organic matter

Dissimilar soils:
- the poorly drained Harpster, Hooppole, Kish, Pella, Selmass, and Will soils in the slightly higher positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Lisbon Series

Drainage class: Somewhat poorly drained
Permeability: Moderate in the upper part and moderately slow in the lower part
Landform: Moraines and till plains
Parent material: Silty material and the underlying loamy till
Slope range: 0 to 4 percent
Taxonomic classification: Fine-silty, mixed, mesic Aquic Argiudolls

Typical Pedon for MLRA 95B

Typical pedon of Lisbon silt loam, 0 to 2 percent slopes, 1,190 feet north and 310 feet east of the southwest corner of sec. 36, T. 43 N., R. 4 E.

Ap—0 to 7 inches; very dark brown (10YR 2/2) silt loam, dark grayish brown (10YR 4/2) dry; moderate fine granular structure, friable; slightly acid; abrupt smooth boundary.

A—7 to 11 inches; very dark brown (10YR 2/2) silt loam, dark grayish brown (10YR 4/2) dry; moderate medium granular structure; friable; neutral; clear smooth boundary.

BA—11 to 17 inches; brown (10YR 4/3) silty clay loam; moderate medium subangular blocky structure; friable; common fine faint dark grayish brown (10YR 4/2) and few fine faint grayish brown (10YR 5/2) iron depletions in the matrix; moderately acid; clear smooth boundary.

Bt1—17 to 23 inches; yellowish brown (10YR 5/4) silty clay loam; moderate medium subangular blocky structure parting to strong fine subangular blocky; friable; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; few fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few fine distinct grayish brown (10YR 5/2) iron depletions in the matrix; moderately acid; clear smooth boundary.

Bt2—23 to 28 inches; light olive brown (2.5Y 5/6) silty clay loam; strong fine angular blocky structure; firm; common distinct grayish brown (10YR 5/2) clay films on faces of peds; common fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few fine distinct grayish brown (2.5Y 5/2) iron depletions in the matrix; neutral; clear smooth boundary.

Bt3—28 to 36 inches; olive brown (2.5Y 4/4) silty clay loam; weak medium prismatic structure parting to strong medium angular and subangular blocky; firm; common distinct grayish brown (10YR 5/2) and few distinct dark grayish brown (10YR 4/2) clay films on faces of peds; many medium prominent grayish brown (10YR 5/2) iron depletions in the matrix; slightly alkaline; clear smooth boundary.

2Bt4—36 to 39 inches; yellowish brown (10YR 5/6) clay loam; weak coarse prismatic structure; firm; common distinct dark grayish brown (10YR 4/2) clay films on vertical faces of peds; few fine black (10YR 2/1) very weakly cemented iron and manganese oxide concretions throughout; few medium distinct light yellowish brown (10YR 6/4) masses of iron accumulation in the matrix; common medium distinct light brownish gray (10YR 6/2) iron depletions in the matrix; slightly effervescent; slightly alkaline; clear smooth boundary.

2C—39 to 70 inches; light yellowish brown (10YR 6/4) loam; massive; firm; pale brown (10YR 6/3) coatings on vertical faces of joints; few fine black (10YR 2/1) very weakly cemented iron and manganese oxide concretions throughout; few fine distinct brownish yellow (10YR 6/6) masses of iron accumulation in the matrix; common fine prominent greenish gray (5GY 6/1) iron depletions in the matrix; strongly effervescent; moderately alkaline.

MLRA Series Range in Characteristics

Thickness of the mollic epipedon: 10 to 18 inches
Thickness of silty material: 20 to 40 inches
Depth to carbonates: 20 to 40 inches
Thickness of the solum: 24 to 42 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—silt loam

Bt horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 6
Texture—silty clay loam

2Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—2 to 6
Texture—clay loam or loam

2C horizon:
Hue—7.5YR or 10YR

Value—4 to 6
Chroma—2 to 6
Texture—loam or sandy loam

59A—Lisbon silt loam, 0 to 2 percent slopes

Setting

Landform: Moraines and till plains
Position on the landform: Footslopes
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Lisbon and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have no subsurface layer
- soils that contain more sand in the upper and middle parts of the subsoil
- soils that contain carbonates at a depth of more than 40 inches
- soils that are overlain by recent, light-colored deposition

Dissimilar soils:
- the poorly drained Pella soils in drainageways
- the moderately well drained Danabrook soils and the well drained Octagon and Parr soils in the higher positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

59B—Lisbon silt loam, 2 to 4 percent slopes

Setting

Landform: Moraines and till plains
Position on the landform: Summits, backslopes, and footslopes
Slope range: 2 to 4 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Lisbon and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have no subsurface layer
- soils that contain more sand in the upper and middle parts of the subsoil
- soils that contain carbonates at a depth of more than 40 inches
- soils that are overlain by recent, light-colored deposition

Dissimilar soils:
- the poorly drained Pella soils in drainageways
- the moderately well drained Danabrook soils and the well drained Octagon and Parr soils in the higher positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Lismod Series

Drainage class: Somewhat poorly drained
Permeability: Moderate
Landform: Moraines and till plains
Parent material: Silty material and the underlying loamy till
Slope range: 0 to 4 percent
Taxonomic classification: Fine-silty, mixed, mesic Aquic Argiudolls

Typical Pedon for MLRA 95B

Typical pedon of Lismod silt loam, 0 to 2 percent slopes, 1,190 feet north and 310 feet east of the southwest corner of sec. 36, T. 43 N., R. 4 E.

Ap—0 to 8 inches; very dark gray (10YR 3/1) silt loam, gray (10YR 5/1) dry; moderate medium granular

structure; friable; common fine roots; neutral; abrupt smooth boundary.

AB—8 to 15 inches; very dark gray (10YR 3/1) silt loam, gray (10YR 5/1) dry; weak fine subangular blocky structure parting to moderate medium granular; friable; common fine roots; neutral; clear smooth boundary.

Bt1—15 to 19 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium prismatic structure parting to moderate medium angular blocky; friable; few fine roots; few faint brown (10YR 4/3) clay films on faces of peds; common distinct very dark gray (10YR 3/1) organic coatings on faces of peds; few fine distinct (10YR 5/2) iron depletions throughout; neutral; clear smooth boundary.

Bt2—19 to 26 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium prismatic structure parting to moderate medium angular blocky; friable; few very fine roots; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; few distinct very dark gray (10YR 3/1) organic coatings on faces of peds; few fine black (7.5YR 2.5/1) iron and manganese oxide concretions throughout; few fine faint brown (7.5YR 4/4) masses of iron accumulation throughout; few fine distinct grayish brown (10YR 5/2) iron depletions throughout; neutral; clear smooth boundary.

Bt3—26 to 31 inches; brown (10YR 5/3) silty clay loam; moderate medium prismatic structure parting to moderate medium angular blocky; friable; few very fine roots; many faint dark grayish brown (10YR 4/2) clay films on faces of peds; few fine black (7.5YR 2.5/1) iron and manganese oxide concretions throughout; common fine distinct brown (7.5YR 4/4) masses of iron accumulation throughout; common fine faint grayish brown (10YR 5/2) iron depletions throughout; neutral; clear smooth boundary.

Bt4—31 to 35 inches; brown (10YR 5/3) silty clay loam; moderate medium prismatic structure parting to moderate medium angular blocky; friable; few very fine roots; many faint dark grayish brown (10YR 4/2) clay films on faces of peds; few fine black (7.5YR 2.5/1) iron and manganese oxide concretions throughout; common fine distinct brown (7.5YR 4/4) masses of iron accumulation throughout; many medium faint grayish brown (10YR 5/2) iron depletions throughout; neutral; clear smooth boundary.

2Bt5—35 to 39 inches; brown (7.5YR 5/3) clay loam; moderate medium prismatic structure parting to weak medium angular blocky; friable; few fine roots; many faint brown (7.5YR 4/2) clay films on faces of peds; few fine black (7.5YR 2.5/1) iron and manganese oxide concretions throughout; common fine distinct strong brown (7.5YR 5/6) masses of iron accumulation throughout; few fine faint brown (7.5YR 5/2) iron depletions throughout; 2 percent pebbles (2 to 5 millimeters in diameter); neutral; clear smooth boundary.

2C1—39 to 48 inches; brown (7.5YR 5/4) loam; massive; friable; few fine black (7.5YR 2.5/1) iron and manganese oxide concretions throughout; few fine distinct strong brown (7.5YR 5/6) masses of iron accumulation throughout; common fine distinct gray (7.5YR 5/1) iron depletions throughout; 2 percent pebbles (1 to 5 millimeters in diameter); slightly effervescent; slightly alkaline; clear smooth boundary.

2C2—48 to 60 inches; brown (7.5YR 5/4) loam; massive; friable; few fine black (7.5YR 2.5/1) iron and manganese oxide concretions throughout; common medium distinct strong brown (7.5YR 5/6) masses of iron accumulation throughout; common medium distinct pinkish gray (7.5YR 6/2) and few fine distinct gray (7.5YR 6/1) iron depletions throughout; 3 percent pebbles (1 to 5 millimeters in diameter); slightly effervescent; slightly alkaline; clear smooth boundary.

2C3—60 to 80 inches; brown (7.5YR 5/4) loam; massive; friable; few fine black (7.5YR 2.5/1) iron and manganese oxide concretions throughout; common medium distinct strong brown (7.5YR 5/6) masses of iron accumulation throughout; many medium distinct pinkish gray (7.5YR 6/2) and few fine distinct gray (7.5YR 6/1) iron depletions throughout; 3 percent pebbles (1 to 5 millimeters in diameter); violently effervescent; moderately alkaline.

MLRA Series Range in Characteristics

Thickness of the mollic epipedon: 10 to 18 inches
Thickness of silty material: 20 to 40 inches
Depth to carbonates: 20 to 40 inches
Thickness of the solum: 24 to 42 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—silt loam

Bt horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 6
Texture—silty clay loam

2Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—2 to 6
Texture—clay loam or loam

2C horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—2 to 6
Texture—loam or sandy loam

635A—Lismod silt loam, 0 to 2 percent slopes

Setting

Landform: Moraines and till plains
Position on the landform: Footslopes
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Lisbon and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have no subsurface layer
- soils that contain more sand in the upper and middle parts of the subsoil
- soils that contain carbonates at a depth of more than 40 inches
- soils that are overlain by recent, light-colored deposition

Dissimilar soils:
- the poorly drained Pella soils in drainageways
- the well drained Parmod soils and the moderately well drained Geryune and Windere soils in the higher positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

635B—Lismod silt loam, 2 to 4 percent slopes

Setting

Landform: Moraines and till plains
Position on the landform: Summits, backslopes, and footslopes
Slope range: 2 to 4 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Lisbon and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have no subsurface layer
- soils that contain more sand in the upper and middle parts of the subsoil
- soils that contain carbonates at a depth of more than 40 inches
- soils that are overlain by recent, light-colored deposition

Dissimilar soils:
- the poorly drained Pella soils in drainageways
- the well drained Parmod soils and the moderately well drained Geryune and Windere soils in the higher positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Lorenzo Series

Drainage class: Well drained
Permeability: Moderate in the upper part and very rapid in the lower part
Landform: Stream terraces, kames, outwash plains, and moraines
Parent material: Loamy drift over sandy and gravelly deposits
Slope range: 0 to 12 percent

Taxonomic classification: Fine-loamy over sandy or sandy-skeletal, mixed, mesic Typic Argiudolls

Typical Pedon for MLRA 95B

Typical pedon of Lorenzo loam, 2 to 4 percent slopes, 1,800 feet north and 960 feet west of the southeast corner of sec. 18, T. 43 N., R. 6 E.

Ap—0 to 8 inches; very dark brown (10YR 2/2) loam, dark grayish brown (10YR 4/2) dry; weak medium subangular blocky structure parting to weak fine and medium granular; friable; common very fine roots; 1 percent gravel; slightly acid; abrupt smooth boundary.

Bt1—8 to 12 inches; 95 percent dark yellowish brown (10YR 4/4) and 5 percent very dark brown (10YR 2/2) clay loam; moderate fine and medium subangular blocky structure; friable; common very fine roots; few distinct dark yellowish brown (10YR 3/4) and dark brown (10YR 3/3) clay films on faces of peds; 5 percent gravel; neutral; clear smooth boundary.

Bt2—12 to 18 inches; dark yellowish brown (10YR 4/4) sandy clay loam; weak medium subangular blocky structure; friable; common very fine roots; few distinct dark yellowish brown (10YR 3/4) and dark brown (10YR 3/3) clay films on faces of peds; 8 percent gravel; slightly acid; abrupt smooth boundary.

2C—18 to 60 inches; dark yellowish brown (10YR 4/4) very gravelly loamy sand and very gravelly sand; single grain; loose; common very fine roots; 32 percent gravel and 5 percent cobbles; strongly effervescent; slightly alkaline.

MLRA Series Range in Characteristics

Thickness of the mollic epipedon: 6 to 15 inches
Depth to sandy and gravelly deposits: 10 to 24 inches
Depth to carbonates: 10 to 24 inches
Thickness of the solum: 12 to 24 inches

Ap or A horizon:
Hue—7.5YR or 10YR
Value—2 or 3
Chroma—1 or 2
Texture—loam, silt loam, or sandy loam

Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 or 4
Texture—clay loam, loam, sandy clay loam, or the gravelly analogs of these textures
Content of gravel—5 to 35 percent

2C horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 to 6
Texture—the gravelly, very gravelly, or extremely gravelly analogs of sand, loamy sand, coarse sand, or loamy coarse sand
Content of gravel—20 to 70 percent

318A—Lorenzo loam, 0 to 2 percent slopes

Setting

Landform: Stream terraces, kames, outwash plains, and moraines
Position on the landform: Summits
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Lorenzo and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a lighter colored surface layer
- soils that contain sandy and gravelly deposits at a depth of more than 24 inches
- soils that have slopes of more than 2 percent
- soils that contain loamy till in the lower part of the profile

Dissimilar soils:
- the somewhat poorly drained Kane soils in the lower positions on the landform
- the excessively drained Rodman soils in the slightly higher positions on the landform
- the poorly drained Will soils in depressions and drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

318B—Lorenzo loam, 2 to 4 percent slopes

Setting

Landform: Stream terraces, kames, outwash plains, and moraines
Position on the landform: Summits, shoulders, and backslopes
Slope range: 2 to 4 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the "Soil Properties" section in Part II of this publication.

Composition

Lorenzo and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that are moderately eroded
- soils that have a lighter colored surface layer
- soils that contain sandy and gravelly deposits at a depth of more than 24 inches
- soils that have slopes of less than 2 percent or more than 4 percent
- soils that contain loamy till in the lower part of the profile

Dissimilar soils:
- the somewhat poorly drained Kane soils in the lower positions on the landform
- the excessively drained Rodman soils in the slightly higher positions on the landform
- the poorly drained Will soils in depressions and drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- "Agronomy" section
- "Wildlife Habitat" section
- "Engineering" section
- "Soil Properties" section

318C2—Lorenzo loam, 4 to 6 percent slopes, eroded

Setting

Landform: Stream terraces, kames, outwash plains, and moraines
Position on the landform: Backslopes and shoulders
Slope range: 4 to 6 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the "Soil Properties" section in Part II of this publication.

Composition

Lorenzo and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a lighter colored surface layer
- soils that contain sandy and gravelly deposits at a depth of more than 24 inches
- soils that have slopes of less than 4 percent or more than 6 percent
- soils that contain loamy till in the lower part of the profile

Dissimilar soils:
- the somewhat poorly drained Kane soils in the lower positions on the landform
- the excessively drained Rodman soils in the slightly higher positions on the landform
- the poorly drained Will soils in depressions and drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- "Agronomy" section
- "Wildlife Habitat" section
- "Engineering" section
- "Soil Properties" section

318D2—Lorenzo loam, 6 to 12 percent slopes, eroded

Setting

Landform: Stream terraces, kames, outwash plains, and moraines
Position on the landform: Backslopes
Slope range: 6 to 12 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the "Soil Properties" section in Part II of this publication.

Composition

Lorenzo and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that are severely eroded
- soils that have a lighter colored surface layer
- soils that contain sandy and gravelly deposits at a depth of more than 24 inches
- soils that have slopes of less than 6 percent or more than 12 percent
- soils that contain loamy till in the lower part of the profile

Dissimilar soils:
- the somewhat poorly drained Kane soils in the lower positions on the landform
- the excessively drained Rodman soils in the slightly higher positions on the landform
- the poorly drained Will soils in depressions and drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Martinsville Series

Drainage class: Well drained
Permeability: Moderate
Landform: Outwash plains and stream terraces
Parent material: Loamy outwash
Slope range: 0 to 6 percent
Taxonomic classification: Fine-loamy, mixed, mesic Typic Hapludalfs

Typical Pedon for MLRA 95B

Typical pedon of Martinsville silt loam, 0 to 2 percent slopes, 660 feet north and 910 feet west of the southeast corner of sec. 15, T. 28 N., R. 11 E.

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; moderate medium granular structure; friable; many very fine roots; neutral; abrupt smooth boundary.

BE—9 to 12 inches; 55 percent brown (10YR 5/3) and 45 percent brown (10YR 4/3) loam; moderate medium subangular blocky structure; friable; many very fine roots; slightly acid; abrupt smooth boundary.

Bt1—12 to 19 inches; dark yellowish brown (10YR 4/4) loam; moderate medium subangular blocky structure; friable; common very fine roots; few distinct very dark grayish brown (10YR 3/2) organo-clay films on faces of peds; neutral; clear smooth boundary.

Bt2—19 to 31 inches; dark yellowish brown (10YR 4/4) clay loam; weak coarse prismatic structure parting to moderate fine subangular blocky; friable; common very fine roots; few distinct brown (10YR 4/3) clay films on faces of peds; few distinct pale brown (10YR 6/3) uncoated silt and sand grains on faces of peds; neutral; clear smooth boundary.

Bt3—31 to 37 inches; dark yellowish brown (10YR 4/4) loam; moderate medium subangular blocky structure; friable; common very fine roots; few distinct brown (10YR 4/3) clay films on faces of peds; few fine black (10YR 2/1) very weakly cemented iron and manganese oxide concretions throughout; strongly acid; abrupt smooth boundary.

Bt4—37 to 49 inches; dark yellowish brown (10YR 4/4) sandy loam; weak medium subangular blocky structure; very friable; few very fine roots; common distinct brown (10YR 4/3) clay films on faces of peds; moderately acid; clear smooth boundary.

Bt5—49 to 58 inches; dark yellowish brown (10YR 4/4) sandy loam; weak coarse subangular blocky structure; very friable; few very fine roots; few distinct brown (10YR 4/3) clay films on faces of peds; moderately acid; gradual smooth boundary.

C—58 to 64 inches; dark yellowish brown (10YR 4/4) sandy loam; massive; very friable; neutral.

MLRA Series Range in Characteristics

Depth to carbonates: Greater than 40 inches
Thickness of the solum: 40 to 70 inches

Ap or A horizon:
Hue—10YR
Value—3 or 4
Chroma—2 or 3
Texture—loam, silt loam, sandy loam, or fine sandy loam

E horizon (if it occurs):
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—2 to 4
Texture—loam, silt loam, sandy loam, or fine sandy loam

Bt horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 6
Texture—clay loam, loam, sandy clay loam, or sandy loam

C horizon:
Hue—10YR
Value—4 or 5
Chroma—3 to 6
Texture—loam, sandy loam, silt loam, or loamy sand

570A—Martinsville silt loam, 0 to 2 percent slopes

Setting

Landform: Outwash plains and stream terraces
Position on the landform: Summits
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Martinsville and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a darker surface layer
- soils that contain sandy outwash at a depth of less than 40 inches
- soils that contain loamy till in the lower part of the profile
- soils that contain less clay in the subsoil

Dissimilar soils:
- the poorly drained Selmass soils in depressions and drainageways
- sandy soils in the higher positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

570B—Martinsville silt loam, 2 to 4 percent slopes

Setting

Landform: Outwash plains and stream terraces
Position on the landform: Summits, shoulders, and backslopes
Slope range: 2 to 4 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Martinsville and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a darker surface layer
- soils that contain sandy outwash at a depth of less than 40 inches
- soils that have slopes of less than 2 percent
- soils that contain loamy till in the lower part of the profile
- soils that contain less clay in the subsoil

Dissimilar soils:
- the poorly drained Selmass soils in depressions and drainageways
- sandy soils in the higher positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

570C2—Martinsville silt loam, 4 to 6 percent slopes, eroded

Setting

Landform: Outwash plains and stream terraces
Position on the landform: Backslopes and shoulders
Slope range: 4 to 6 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this

section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Martinsville and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a darker surface layer
- soils that contain sandy outwash at a depth of less than 40 inches
- soils that have slopes of less than 4 percent or more than 6 percent
- soils that contain loamy till in the lower part of the profile
- soils that contain less clay in the subsoil

Dissimilar soils:
- the poorly drained Selmass soils in depressions and drainageways
- sandy soils in the higher positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Martinton Series

Drainage class: Somewhat poorly drained
Permeability: Moderately slow
Landform: Lake plains
Parent material: Lacustrine deposits
Slope range: 0 to 2 percent
Taxonomic classification: Fine, illitic, mesic Aquic Argiudolls

Typical Pedon for MLRA 95B

Typical pedon of Martinton silt loam, 0 to 2 percent slopes, 165 feet south and 1,872 feet west of the northeast corner of sec. 10, T. 46 N., R. 5 E.

Ap—0 to 4 inches; black (10YR 2/1) silt loam, dark grayish brown (10YR 4/2) dry; moderate fine granular structure; friable; common very fine roots; moderately acid; abrupt smooth boundary.

A—4 to 11 inches; black (10YR 2/1) silt loam, dark grayish brown (10YR 4/2) dry; weak fine subangular blocky structure parting to weak fine granular; friable; common very fine roots; moderately acid; abrupt smooth boundary.

Bt—11 to 19 inches; yellowish brown (10YR 5/4) silty clay loam; weak fine subangular blocky structure; friable; common very fine roots; common distinct grayish brown (10YR 5/2) clay films on faces of peds and in pores; common fine reddish brown (5YR 4/4) very weakly cemented iron oxide concretions throughout; few fine black (N 2.5/0) very weakly cemented iron and manganese oxide concretions throughout; common fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; moderately acid; clear smooth boundary.

Btg—19 to 30 inches; grayish brown (2.5Y 5/2) silty clay loam; weak medium prismatic structure parting to moderate fine and medium subangular blocky; friable; common very fine roots; common distinct gray (2.5Y 5/1) clay films on faces of peds and in pores; common fine and medium reddish brown (5YR 4/4) very weakly cemented iron oxide concretions throughout; common fine and medium black (N 2.5/0) very weakly cemented iron and manganese oxide concretions throughout; common fine and medium prominent yellowish brown (10YR 5/6) and common fine prominent strong brown (7.5YR 4/6) masses of iron accumulation in the matrix; moderately acid; clear wavy boundary.

BCg—30 to 43 inches; grayish brown (2.5Y 5/2) silt loam; weak medium and coarse angular blocky structure; firm; common very fine roots; common fine and medium reddish brown (5YR 4/4) very weakly cemented iron oxide concretions throughout; common fine and medium black (N 2.5/0) very weakly cemented iron and manganese oxide concretions throughout; common fine and medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; neutral; clear smooth boundary.

Cg—43 to 60 inches; grayish brown (2.5Y 5/2), stratified silt loam and very fine sandy loam; massive; firm; few very fine roots; common fine reddish brown (5YR 4/4) very weakly cemented iron oxide concretions throughout; common fine and medium black (N 2.5/0) very weakly cemented iron and manganese oxide concretions throughout; many medium and coarse prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; strongly effervescent; slightly alkaline.

MLRA Series Range in Characteristics

Thickness of the mollic epipedon: 10 to 18 inches
Depth to carbonates: 30 to 52 inches
Thickness of the solum: 30 to 52 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—silt loam or silty clay loam

Bt or Btg horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 4
Texture—silty clay loam or silty clay

Cg or C horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—1 to 6
Texture—silt loam, silty clay loam, clay loam, loam, or sandy loam

189A—Martinton silt loam, 0 to 2 percent slopes

Setting

Landform: Lake plains
Position on the landform: Footslopes
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Martinton and similar soils: 90 percent
Dissimilar soils: 10 percent

Similar soils:
- soils that contain less clay in the subsoil
- soils that have a thinner subsurface layer
- soils that contain sandy and gravelly deposits in the lower part of the profile

Dissimilar soils:
- poorly drained soils in depressions and drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

McHenry Series

Drainage class: Well drained
Permeability: Moderate
Landform: Moraines and till plains
Parent material: Silty material and the underlying loamy till
Slope range: 2 to 4 percent
Taxonomic classification: Fine-loamy, mixed, mesic Typic Hapludalfs

Typical Pedon for MLRA 95B

Typical pedon of McHenry silt loam, 2 to 4 percent slopes, 60 feet south and 900 feet east of the northwest corner of sec. 17, T. 45 N., R. 8 E.

A—0 to 5 inches; very dark gray (10YR 3/1) silt loam, gray (10YR 5/1) dry; moderate fine and medium granular structure; friable; common very fine and fine roots; many distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds and in pores; slightly acid; abrupt smooth boundary.
E—5 to 10 inches; brown (10YR 4/3) silt loam; weak thin platy structure; friable; common very fine roots; few distinct dark brown (10YR 3/3) organic coatings on faces of peds and in pores; slightly acid; abrupt smooth boundary.
BE—10 to 14 inches; dark yellowish brown (10YR 4/4) silt loam; weak fine subangular blocky structure; friable; common very fine roots; few distinct dark brown (10YR 3/3) organic coatings on faces of peds and in pores; slightly acid; clear smooth boundary.
Bt1—14 to 22 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate fine and medium subangular blocky structure; friable; common very fine roots; few distinct brown (10YR 4/3) clay films on faces of peds and in pores; slightly acid; clear smooth boundary.
2Bt2—22 to 32 inches; dark yellowish brown (10YR 4/4) loam; moderate medium subangular blocky structure; firm; common very fine roots; few distinct brown (10YR 4/3) clay films on faces of peds and in pores; 4 percent gravel; strongly acid; clear smooth boundary.
2Bt3—32 to 37 inches; dark yellowish brown (10YR 4/4) fine sandy loam; weak medium subangular blocky structure; friable; common very fine roots; common distinct brown (10YR 4/3) clay films on

faces of peds; few distinct dark brown (10YR 3/3) organo-clay films on faces of peds and in pores; 8 percent gravel; neutral; clear smooth boundary.

2C—37 to 60 inches; yellowish brown (10YR 5/4) gravelly sandy loam; massive; friable; common medium strong brown (7.5YR 5/6) very weakly cemented iron oxide concretions throughout; 21 percent gravel; violently effervescent; moderately alkaline.

MLRA Series Range in Characteristics

Thickness of silty material: 15 to 30 inches
Depth to carbonates: 30 to 50 inches
Thickness of the solum: 30 to 50 inches

Ap or A horizon:
Hue—10YR
Value—2 to 4 (4 to 7 dry)
Chroma—1 to 3
Texture—silt loam

E horizon (if it occurs):
Hue—10YR
Value—4 or 5
Chroma—2 to 4
Texture—silt loam

Bt horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 6
Texture—silty clay loam or silt loam

2Bt horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 8
Texture—clay loam, sandy clay loam, loam, sandy loam, or fine sandy loam

2C horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 8
Texture—sandy loam, fine sandy loam, or the gravelly analogs of these textures
Content of gravel—10 to 35 percent

310B—McHenry silt loam, 2 to 4 percent slopes

Setting

Landform: Moraines and till plains
Position on the landform: Summits, shoulders, and backslopes
Slope range: 2 to 4 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

McHenry and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a thicker surface layer
- soils that contain more sand in the upper part of the profile
- soils that are moderately eroded
- soils that have a seasonal high water table at a depth of less than 6 feet
- soils that contain carbonates at a depth of more than 50 inches

Dissimilar soils:
- the somewhat poorly drained Elburn and Virgil soils in the lower positions on the landform
- the poorly drained Pella soils in drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Millbrook Series

Drainage class: Somewhat poorly drained
Permeability: Moderate
Landform: Outwash plains, stream terraces, and till plains
Parent material: Silty material and the underlying loamy outwash
Slope range: 0 to 2 percent
Taxonomic classification: Fine-silty, mixed, mesic Udollic Endoaqualfs

Typical Pedon for MLRA 95B

Typical pedon of Millbrook silt loam, 0 to 2 percent slopes, 150 feet south and 1,390 feet east of the northwest corner of sec. 12, T. 42 N., R. 5 E.

Ap—0 to 8 inches; black (10YR 2/1) silt loam, dark gray (10YR 4/1) dry; moderate fine granular

structure; friable; common very fine roots; moderately acid; abrupt smooth boundary.

E—8 to 12 inches; 70 percent dark grayish brown (10YR 4/2) and 30 percent brown (10YR 4/3) silt loam; weak thin platy structure parting to moderate fine granular; friable; common very fine roots; moderately acid; clear smooth boundary.

Bt1—12 to 18 inches; brown (10YR 4/3) silty clay loam; moderate fine subangular blocky structure; friable; common very fine roots; many distinct dark grayish brown (10YR 4/2) clay films on faces of peds; common fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; strongly acid; clear smooth boundary.

Bt2—18 to 26 inches; grayish brown (10YR 5/2) silty clay loam; weak fine and medium prismatic structure parting to moderate fine and medium subangular blocky; firm; few very fine roots; common distinct grayish brown (2.5Y 5/2) clay films on faces of peds; few distinct very dark brown (10YR 2/2) organic coatings in root channels and in pores; few fine very dark grayish brown (10YR 3/2) iron and manganese oxide concretions throughout; many fine and medium faint brown (10YR 5/3) and common fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; strongly acid; clear smooth boundary.

2Bt3—26 to 34 inches; grayish brown (10YR 5/2) loam; weak medium prismatic structure parting to moderate medium subangular blocky; friable; few very fine roots; few distinct grayish brown (2.5Y 5/2) clay films on faces of peds; common fine very dark brown (10YR 2/2) iron and manganese oxide concretions throughout; many fine and medium distinct yellowish brown (10YR 5/6) and common fine prominent yellowish brown (10YR 5/8) masses of iron accumulation in the matrix; moderately acid; clear smooth boundary.

2Bt4—34 to 41 inches; dark grayish brown (10YR 4/2) sandy loam; weak coarse subangular blocky structure; very friable; few very fine roots; few distinct grayish brown (10YR 5/2) clay films on faces of peds; common fine very dark brown (10YR 2/2) iron and manganese oxide concretions throughout; common fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; moderately acid; clear smooth boundary.

2C1—41 to 57 inches; stratified, light brownish gray (2.5Y 6/2) and yellowish brown (10YR 5/6 and 5/8) loam and sandy loam and gray (5Y 6/1) silt loam; massive; very friable; common fine very dark brown (10YR 2/2) iron and manganese oxide concretions throughout; 3 percent gravel; neutral; clear wavy boundary.

2C2—57 to 65 inches; stratified, light brownish gray (2.5Y 6/2) and yellowish brown (10YR 5/6 and 5/8) loam and sandy loam and gray (5Y 6/1) silt loam; massive; very friable; few fine very dark brown (10YR 2/2) iron and manganese oxide concretions throughout; 4 percent gravel; strongly effervescent; moderately alkaline.

MLRA Series Range in Characteristics

Thickness of silty material: 24 to 40 inches
Depth to carbonates: Greater than 40 inches
Thickness of the solum: 40 to 60 inches

Ap horizon:
Hue—10YR
Value—2 or 3
Chroma—1 to 3
Texture—silt loam

E horizon:
Hue—10YR
Value—4 to 6
Chroma—2
Texture—silt loam

Bt horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 4
Texture—silty clay loam or silt loam

2Bt horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 6
Texture—sandy loam, loam, silt loam, clay loam, or sandy clay loam

2C horizon:
Hue—7.5YR, 10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 to 8
Texture—stratified sandy loam, loam, silt loam, sandy clay loam, or loamy sand

219A—Millbrook silt loam, 0 to 2 percent slopes

Setting

Landform: Outwash plains, stream terraces, and till plains
Position on the landform: Footslopes
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Millbrook and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a seasonal high water table at a depth of more than 2.5 feet
- soils that have a darker subsurface layer
- soils that contain sandy and gravelly deposits in the lower part of the profile
- soils that contain loamy outwash at a depth of more than 40 inches

Dissimilar soils:
- the well drained Harvard and Proctor soils in the higher positions on the landform
- the poorly drained Pella soils in depressions and drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Millington Series

Drainage class: Poorly drained
Permeability: Moderate
Landform: Flood plains
Parent material: Calcareous loamy alluvium
Slope range: 0 to 2 percent
Taxonomic classification: Fine-loamy, mixed, calcareous, mesic Cumulic Endoaquolls

Typical Pedon for MLRA 95B

Typical pedon of Millington silt loam, 0 to 2 percent slopes, undrained, occasionally flooded, 850 feet north and 1,050 feet east of the southwest corner of sec. 27, T. 46 N., R. 8 E.

A1—0 to 8 inches; black (10YR 2/1) silt loam, dark gray (10YR 4/1) dry; moderate fine and medium granular structure; friable; many very fine roots; about 25 percent sand; 4 percent fine snail-shell fragments; violently effervescent; moderately alkaline; clear smooth boundary.

A2—8 to 14 inches; black (N 2.5/0) silt loam, very dark gray (10YR 3/1) dry; weak medium subangular blocky structure parting to moderate medium granular; friable; many very fine roots; about 25 percent sand; 5 percent fine snail-shell fragments; violently effervescent; moderately alkaline; clear smooth boundary.

A3—14 to 21 inches; black (10YR 2/1) silt loam; weak fine and medium subangular blocky structure parting to moderate medium granular; friable; common very fine roots; about 15 percent sand; common distinct black (N 2.5/0) organic coatings on faces of peds and in pores; 6 percent fine snail-shell fragments; common fine prominent dark brown (7.5YR 3/3) masses of iron accumulation in the matrix; violently effervescent; moderately alkaline; clear smooth boundary.

Bg—21 to 37 inches; very dark gray (2.5Y 3/1) silt loam; weak medium subangular blocky structure; friable; common very fine roots; about 20 percent sand; few distinct black (N 2.5/0) organic coatings on faces of peds and in pores; 1 percent fine snail-shell fragments; common fine and medium distinct dark olive brown (2.5Y 3/3) masses of iron accumulation in the matrix; strongly effervescent; moderately alkaline; clear smooth boundary.

Cg—37 to 60 inches; 55 percent dark grayish brown (2.5Y 4/2), 30 percent light brownish gray (2.5Y 6/2), and 15 percent yellowish brown (10YR 5/6), stratified loam, silt loam, and sandy loam; massive; friable; common very fine roots; few distinct black (10YR 2/1) organic coatings in root channels and in pores; 1 percent gravel; slightly effervescent; slightly alkaline.

MLRA Series Range in Characteristics

Thickness of the mollic epipedon: 24 to 40 inches
Depth to carbonates: Less than 10 inches
Thickness of the solum: 24 to 48 inches

Ap or A horizon:
Hue—10YR, 2.5Y, or N
Value—2 or 3
Chroma—0 to 2
Texture—silt loam, loam, silty clay loam, or clay loam

Bg horizon:
Hue—10YR, 2.5Y, 5Y, or N
Value—3 to 5
Chroma—0 to 2

Texture—loam, silt loam, clay loam, or silty clay loam

Cg horizon:
Hue—10YR, 2.5Y, 5Y, or N
Value—3 to 6
Chroma—0 to 2
Texture—loam, silt loam, or sandy loam
Content of gravel—less than 15 percent

1082A—Millington silt loam, 0 to 2 percent slopes, undrained, occasionally flooded

Setting

Landform: Flood plains
Position on the landform: Footslopes and toeslopes
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Millington and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a lighter colored subsoil
- soils that contain less sand and more silt in the upper one-half of the profile
- soils that contain more gravel in the lower part of the profile
- soils that do not contain carbonates at or near the surface

Dissimilar soils:
- the somewhat poorly drained Grundelein and Kane soils on the higher adjacent landforms
- the very poorly drained Houghton and Palms soils in depressions

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

8082A—Millington silt loam, 0 to 2 percent slopes, occasionally flooded

Setting

Landform: Flood plains
Position on the landform: Footslopes and toeslopes
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Millington and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a lighter colored subsoil
- soils that contain less sand and more silt in the upper one-half of the profile
- soils that contain more gravel in the lower part of the profile
- soils that do not contain carbonates at or near the surface

Dissimilar soils:
- the somewhat poorly drained Grundelein and Kane soils on the higher adjacent landforms
- the very poorly drained Houghton and Palms soils in depressions

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Millstream Series

Drainage class: Somewhat poorly drained
Permeability: Moderate in the upper part and very rapid in the lower part
Landform: Outwash plains and stream terraces
Parent material: Silty material and the underlying loamy outwash over sandy and gravelly deposits
Slope range: 0 to 2 percent

Taxonomic classification: Fine-silty, mixed, mesic Aquollic Hapludalfs

Typical Pedon for MLRA 95B

Typical pedon of Millstream silt loam, 0 to 2 percent slopes, 5 feet north and 1,600 feet west of the southeast corner of sec. 32, T. 45 N., R. 6 E.

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak very fine and fine granular structure; friable; common very fine roots; slightly acid; abrupt smooth boundary.

E—8 to 14 inches; brown (10YR 5/3) silt loam; weak medium platy structure parting to weak fine granular; friable; common very fine roots; common fine dark brown (7.5YR 3/2) very weakly cemented iron and manganese oxide concretions throughout; moderately acid; clear smooth boundary.

Bt1—14 to 21 inches; brown (10YR 5/3) silty clay loam; moderate very fine subangular blocky structure; friable; common very fine roots; many distinct brown (10YR 4/3) and few distinct dark grayish brown (10YR 4/2) clay films on faces of peds and in pores; common fine dark brown (7.5YR 3/2) very weakly cemented iron and manganese oxide concretions throughout; many fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; moderately acid; clear smooth boundary.

Bt2—21 to 27 inches; grayish brown (10YR 5/2) silty clay loam; moderate fine subangular blocky structure; friable; common very fine roots; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds and in pores; few distinct very dark grayish brown (10YR 3/2) organo-clay films on faces of peds and in pores; common fine dark brown (7.5YR 3/2) very weakly cemented iron and manganese oxide concretions throughout; many fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; strongly acid; clear wavy boundary.

2Bt3—27 to 34 inches; grayish brown (10YR 5/2) sandy clay loam; weak medium prismatic structure parting to moderate fine and medium subangular blocky; friable; common very fine roots; few distinct dark grayish brown (10YR 4/2) clay films and very dark grayish brown (10YR 3/2) organo-clay films on faces of peds and in pores; many medium and coarse prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; 3 percent gravel; strongly acid; clear wavy boundary.

2Bt4—34 to 43 inches; brown (10YR 4/3) sandy loam; weak medium and coarse subangular blocky structure; very friable; few very fine roots; few distinct dark grayish brown (10YR 4/2) clay films on faces of peds and in pores; many coarse prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; many medium and coarse faint brown (10YR 5/3) iron depletions in the matrix; 3 percent gravel; slightly acid; clear wavy boundary.

2Bt5—43 to 47 inches; 60 percent dark yellowish brown (10YR 4/6) and 40 percent dark brown (10YR 3/3) sandy loam; weak medium subangular blocky structure; very friable; few very fine roots; few distinct very dark grayish brown (10YR 3/2) organo-clay films on faces of peds and in pores; 12 percent gravel; neutral; clear wavy boundary.

3C—47 to 60 inches; brown (10YR 5/3) gravelly loamy sand and gravelly sand; single grain; loose; few very fine roots; 25 percent gravel; strongly effervescent; moderately alkaline.

MLRA Series Range in Characteristics

Thickness of silty material: 24 to 45 inches
Depth to sandy and gravelly deposits: 32 to 50 inches
Depth to carbonates: 30 to 50 inches
Thickness of the solum: 36 to 50 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 to 3
Texture—silt loam

E horizon (if it occurs):
Hue—10YR
Value—4 to 6
Chroma—2 or 3
Texture—silt loam

Bt horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 6
Texture—silty clay loam or silt loam

2Bt horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 6
Texture—clay loam, loam, sandy loam, silt loam, sandy clay loam, loamy sand, or the gravelly analogs of these textures
Content of gravel—0 to 25 percent

3C horizon:
Hue—7.5YR, 10YR, or 2.5Y
Value—4 to 6

Chroma—2 to 6
Texture—the gravelly, very gravelly, or extremely gravelly analogs of sand, loamy sand, coarse sand, loamy coarse sand, or sandy loam
Content of gravel—15 to 70 percent

557A—Millstream silt loam, 0 to 2 percent slopes

Setting

Landform: Outwash plains and stream terraces
Position on the landform: Footslopes
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the "Soil Properties" section in Part II of this publication.

Composition

Millstream and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a darker subsurface layer
- soils that have a lighter colored surface layer
- soils that contain more sand in the upper one-half of the profile
- soils that contain less gravel in the lower part of the profile
- soils that contain sandy and gravelly deposits at a depth of less than 32 inches or more than 50 inches

Dissimilar soils:
- the poorly drained Dunham soils and the very poorly drained Houghton and Palms soils in depressions and drainageways
- the well drained Bowes and Waupecan soils in the higher positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- "Agronomy" section
- "Forestland" section
- "Wildlife Habitat" section
- "Engineering" section
- "Soil Properties" section

Nappanee Series

Drainage class: Somewhat poorly drained
Permeability: Slow
Landform: Lake plains and moraines
Parent material: Lacustrine deposits
Slope range: 2 to 4 percent
Taxonomic classification: Fine, illitic, mesic Aeric Epiaqualfs

Typical Pedon for MLRA 95B

Typical pedon of Nappanee silt loam, 2 to 4 percent slopes, 1,380 feet south and 2,380 feet east of the northwest corner of sec. 6, T. 44 N., R. 9 E.

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; weak very fine and fine granular structure; friable; common very fine and few fine roots; common fine dark yellowish brown (10YR 4/6) iron oxide concretions throughout; neutral; abrupt smooth boundary.

BE—8 to 11 inches; grayish brown (10YR 5/2) silty clay loam; weak medium platy structure parting to moderate very fine and fine granular; friable; common very fine and few fine roots; many distinct light gray (10YR 7/2 dry) clay depletions on faces of peds; common fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common fine faint gray (10YR 6/1) iron depletions in the matrix; 1 percent gravel; neutral; clear smooth boundary.

Bt1—11 to 17 inches; brown (10YR 4/3) silty clay; moderate very fine subangular blocky structure; firm; common very fine and few fine roots; common distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds and in pores; many distinct dark grayish brown (10YR 4/2) clay films on faces of peds; few fine and medium black (10YR 2/1) iron and manganese oxide concretions throughout; common fine distinct yellowish brown (10YR 5/6) masses of iron accumulation and grayish brown (2.5Y 5/2) iron depletions in the matrix; 1 percent gravel; neutral; clear smooth boundary.

Bt2—17 to 24 inches; brown (10YR 4/3) silty clay; strong fine and medium subangular blocky structure; firm; common very fine and few fine roots; few distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds and in pores; many distinct dark grayish brown (10YR 4/2) clay films on faces of peds; few fine black

(10YR 2/1) iron and manganese oxide concretions throughout; common fine distinct yellowish brown (10YR 5/6) masses of iron accumulation and grayish brown (2.5Y 5/2) iron depletions in the matrix; 1 percent gravel; neutral; clear smooth boundary.

Bt3—24 to 34 inches; dark grayish brown (10YR 4/2) silty clay; moderate medium prismatic structure parting to moderate medium angular blocky; firm; common very fine and few fine roots; many distinct dark grayish brown (2.5Y 4/2) clay films on faces of peds; few fine black (10YR 2/1) iron and manganese oxide concretions throughout; common fine distinct yellowish brown (10YR 5/6) masses of iron accumulation and grayish brown (2.5Y 5/2) iron depletions in the matrix; 1 percent gravel; very slightly effervescent; moderately alkaline; gradual wavy boundary.

Bk—34 to 43 inches; brown (10YR 5/3) silty clay; moderate medium prismatic structure; firm; common very fine roots; common fine white (10YR 8/1) masses of carbonate; many fine and medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common fine and medium distinct grayish brown (2.5Y 5/2) iron depletions in the matrix; 1 percent gravel; slightly effervescent; moderately alkaline; gradual wavy boundary.

C—43 to 63 inches; brown (10YR 5/3) silty clay; massive; firm; many fine and medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common fine and medium distinct grayish brown (2.5Y 5/2) iron depletions in the matrix; 1 percent gravel; slightly effervescent; moderately alkaline.

MLRA Series Range in Characteristics

Depth to carbonates: 20 to 40 inches
Thickness of the solum: 24 to 50 inches

Ap horizon:
Hue—10YR
Value—3 or 4
Chroma—1 to 3
Texture—silt loam or silty clay loam

Bt horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 4
Texture—silty clay, clay, or silty clay loam

C horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 4
Texture—silty clay, silty clay loam, clay loam, or clay

228B—Nappanee silt loam, 2 to 4 percent slopes

Setting

Landform: Lake plains and moraines
Position on the landform: Summits, shoulders, and backslopes
Slope range: 2 to 4 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Nappanee and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that are moderately eroded
- soils that have a darker surface layer
- soils that contain less clay in the profile
- soils that have a seasonal high water table at a depth of more than 2 feet

Dissimilar soils:
- the somewhat excessively drained Casco and well drained Fox soils in the higher positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Octagon Series

Drainage class: Well drained
Permeability: Moderate in the upper part and moderately slow in the lower part
Landform: Moraines and till plains
Parent material: Thin mantle of silty material and the underlying loamy till

Slope range: 2 to 6 percent
Taxonomic classification: Fine-loamy, mixed, mesic Oxyaquic Hapludalfs

Typical Pedon for MLRA 95B

Typical pedon of Octagon silt loam, 2 to 4 percent slopes, 70 feet north and 1,900 feet east of the southwest corner of sec. 18, T. 41 N., R. 7 E.

Ap—0 to 7 inches; very dark brown (10YR 2/2) silt loam, dark grayish brown (10YR 4/2) dry; weak very fine granular structure; friable; common very fine roots; neutral; abrupt smooth boundary.
BE—7 to 13 inches; brown (10YR 4/3) silt loam; weak very fine granular structure; friable; common very fine roots; common distinct dark brown (10YR 3/3) organic coatings on faces of peds; slightly acid; clear smooth boundary.
2Bt1—13 to 25 inches; brown (7.5YR 4/4) clay loam; moderate fine subangular blocky structure; friable; common very fine roots; common distinct brown (7.5YR 4/3) clay films on faces of peds; 2 percent gravel; neutral; clear smooth boundary.
2Bt2—25 to 30 inches; brown (7.5YR 5/4) clay loam; weak fine subangular blocky structure; friable; few very fine roots; few distinct brown (7.5YR 4/3) and dark brown (7.5YR 3/3) clay films on faces of peds; 3 percent gravel; slightly effervescent; slightly alkaline; clear smooth boundary.
2C—30 to 60 inches; brown (7.5YR 5/4) loam; massive; friable; few very fine roots; 5 percent gravel; strongly effervescent; moderately alkaline.

MLRA Series Range in Characteristics

Thickness of silty material: Less than 18 inches
Depth to carbonates: 20 to 40 inches
Thickness of the solum: 24 to 40 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 to 3
Texture—silt loam or loam

Bt or 2Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 or 4
Texture—clay loam, loam, or silty clay loam

2C horizon:
Hue—7.5YR or 10YR
Value—5 or 6
Chroma—3 or 4
Texture—loam
Content of gravel—less than 15 percent

656B—Octagon silt loam, 2 to 4 percent slopes

Setting

Landform: Moraines and till plains
Position on the landform: Summits, shoulders, and backslopes
Slope range: 2 to 4 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the "Soil Properties" section in Part II of this publication.

Composition

Octagon and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that contain carbonates at a depth of less than 20 inches or more than 40 inches
- soils that have a seasonal high water table at a depth of more than 3.5 feet
- soils that have a lighter colored surface layer
- soils that have a thicker surface layer

Dissimilar soils:
- the somewhat poorly drained Herbert and Lisbon soils in the lower positions on the landform
- the poorly drained Pella soils in depressions and drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- "Agronomy" section
- "Forestland" section
- "Wildlife Habitat" section
- "Engineering" section
- "Soil Properties" section

656C2—Octagon silt loam, 4 to 6 percent slopes, eroded

Setting

Landform: Moraines and till plains
Position on the landform: Summits, shoulders, and backslopes
Slope range: 4 to 6 percent

A typical soil series description with range in

characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Octagon and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that contain carbonates at a depth of less than 20 inches or more than 40 inches
- soils that have a seasonal high water table at a depth of more than 3.5 feet
- soils that have a lighter colored surface layer
- soils that have a thicker surface layer
- soils that have slopes of less than 4 percent or more than 6 percent

Dissimilar soils:
- the somewhat poorly drained Herbert and Lisbon soils in the lower positions on the landform
- the poorly drained Pella soils in drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

802B—Orthents, loamy, undulating

Setting

Slope range: 2 to 4 percent

Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Orthents and similar soils: 100 percent

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Ozaukee Series

Drainage class: Moderately well drained
Permeability: Slow
Landform: Moraines and till plains
Parent material: Thin mantle of silty material and the underlying silty clay loam till
Slope range: 2 to 20 percent
Taxonomic classification: Fine, illitic, mesic Oxyaquic Hapludalfs

Typical Pedon for MLRA 95B

Typical pedon of Ozaukee silt loam, 4 to 6 percent slopes, eroded, 1,596 feet south and 1,390 feet west of the northeast corner of sec. 4, T. 43 N., R. 7 E.

Ap1—0 to 4 inches; dark grayish brown (10YR 4/2) silt loam, pale brown (10YR 6/3) dry; weak fine subangular blocky structure parting to weak fine and medium granular; friable; common very fine roots; common distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; neutral; abrupt smooth boundary.

Ap2—4 to 7 inches; 97 percent dark grayish brown (10YR 4/2) and 3 percent dark yellowish brown (10YR 4/4) silt loam, pale brown (10YR 6/3) dry; moderate medium subangular blocky structure parting to weak medium granular; firm; common very fine roots; common distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; 1 percent gravel; neutral; abrupt smooth boundary.

Bt1—7 to 11 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate fine and medium subangular blocky structure; firm; common very fine roots; common distinct brown (10YR 4/3) clay films on faces of peds; very few distinct very dark grayish brown (10YR 3/2) organic coatings in root channels and in pores; 1 percent gravel; neutral; clear smooth boundary.

2Bt2—11 to 19 inches; dark yellowish brown (10YR 4/4) silty clay; weak medium prismatic structure parting to moderate medium subangular blocky; firm; common very fine roots; common distinct brown (10YR 4/3) clay films on faces of peds; very few distinct very dark grayish brown (10YR 3/2) organic coatings in root channels and in pores; 1 percent gravel; neutral; clear smooth boundary.

2Bt3—19 to 26 inches; dark yellowish brown (10YR 4/4) silty clay; weak medium prismatic structure parting to moderate medium subangular blocky;

firm; common very fine roots; few distinct dark grayish brown (10YR 4/2) and brown (10YR 4/3) clay films on faces of peds; few fine black (10YR 2/1) very weakly cemented iron and manganese oxide concretions throughout; common fine distinct dark yellowish brown (10YR 4/6) masses of iron accumulation in the matrix; common fine prominent grayish brown (2.5Y 5/2) iron depletions in the matrix; 1 percent gravel; neutral; clear smooth boundary.

2Bt4—26 to 31 inches; light olive brown (2.5Y 5/4) silty clay loam; weak medium prismatic structure parting to weak medium subangular blocky; friable; common very fine roots; few distinct dark grayish brown (2.5Y 4/2) clay films on faces of peds and in pores; common fine black (10YR 2/1) very weakly cemented iron and manganese oxide concretions throughout; common fine prominent dark yellowish brown (10YR 4/6) masses of iron accumulation in the matrix; common fine distinct grayish brown (2.5Y 5/2) iron depletions in the matrix; 2 percent gravel; strongly effervescent; slightly alkaline; clear smooth boundary.

2BC—31 to 37 inches; light olive brown (2.5Y 5/3) silty clay loam; weak medium and coarse subangular blocky structure; firm; common very fine roots; few distinct dark grayish brown (2.5Y 4/2) clay films in pores; few fine black (10YR 2/1) very weakly cemented iron and manganese oxide concretions throughout; few fine yellowish brown (10YR 5/8) very weakly cemented iron oxide concretions throughout; common fine and medium distinct light olive brown (2.5Y 5/6) masses of iron accumulation in the matrix; common fine and medium faint grayish brown (2.5Y 5/2) iron depletions in the matrix; 2 percent gravel; strongly effervescent; moderately alkaline; gradual smooth boundary.

2C—37 to 60 inches; light olive brown (2.5Y 5/3) silty clay loam; massive; firm; common very fine roots; common fine light gray (2.5Y 7/2) soft masses of carbonates; common fine yellowish brown (10YR 5/8) very weakly cemented iron oxide concretions throughout; few fine black (10YR 2/1) very weakly cemented iron and manganese oxide concretions throughout; common medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common medium faint grayish brown (2.5Y 5/2) iron depletions in the matrix; 3 percent gravel; violently effervescent; moderately alkaline.

MLRA Series Range in Characteristics

Thickness of silty material: Less than 18 inches
Depth to carbonates: 14 to 40 inches
Thickness of the solum: 20 to 40 inches

Ap or A horizon:
Hue—10YR
Value—3 or 4
Chroma—1 to 3
Texture—silt loam or silty clay loam

E horizon (if it occurs):
Hue—10YR
Value—4 or 5
Chroma—2 or 3
Texture—silt loam or loam

Bt or 2Bt horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—3 or 4
Texture—silty clay loam or silty clay

2C horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—2 to 4
Texture—silty clay loam or clay loam

530B—Ozaukee silt loam, 2 to 4 percent slopes

Setting

Landform: Moraines and till plains
Position on the landform: Summits, shoulders, and backslopes
Slope range: 2 to 4 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Ozaukee and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a darker surface layer
- soils that are moderately eroded
- soils that contain more sand and less clay in the upper part of the profile

Dissimilar soils:
- the poorly drained Ashkum soils in depressions and drainageways
- the somewhat poorly drained Beecher soils in the lower positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- "Agronomy" section
- "Forestland" section
- "Wildlife Habitat" section
- "Engineering" section
- "Soil Properties" section

530C2—Ozaukee silt loam, 4 to 6 percent slopes, eroded

Setting

Landform: Moraines and till plains
Position on the landform: Summits, shoulders, and backslopes
Slope range: 4 to 6 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the "Soil Properties" section in Part II of this publication.

Composition

Ozaukee and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a darker surface layer
- soils that contain more sand and less clay in the upper part of the profile
- soils that are severely eroded
- soils that have slopes of less than 4 percent or more than 6 percent

Dissimilar soils:
- the poorly drained Ashkum soils in depressions and drainageways
- the somewhat poorly drained Beecher soils in the lower positions on the landform
- calcareous soils in positions on the landform similar to those of the Ozaukee soil

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- "Agronomy" section
- "Forestland" section
- "Wildlife Habitat" section
- "Engineering" section
- "Soil Properties" section

530C3—Ozaukee silty clay loam, 4 to 6 percent slopes, severely eroded

Setting

Landform: Moraines and till plains
Position on the landform: Summits, shoulders, and backslopes
Slope range: 4 to 6 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the "Soil Properties" section in Part II of this publication.

Composition

Ozaukee and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that are moderately eroded
- soils that contain more sand and less clay in the upper part of the profile
- soils that have slopes of less than 4 percent or more than 6 percent

Dissimilar soils:
- the poorly drained Ashkum soils in depressions and drainageways
- the somewhat poorly drained Beecher soils in the lower positions on the landform
- calcareous soils in positions on the landform similar to those of the Ozaukee soil

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- "Agronomy" section
- "Forestland" section
- "Wildlife Habitat" section
- "Engineering" section
- "Soil Properties" section

530D2—Ozaukee silt loam, 6 to 12 percent slopes, eroded

Setting

Landform: Moraines and till plains

Position on the landform: Backslopes and shoulders
Slope range: 6 to 12 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Ozaukee and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a darker surface layer
- soils that contain more sand and less clay in the upper part of the profile
- soils that are severely eroded
- soils that have slopes of less than 6 percent or more than 12 percent

Dissimilar soils:
- the poorly drained Ashkum soils in depressions and drainageways
- the somewhat poorly drained Beecher soils in the lower positions on the landform
- calcareous soils in positions on the landform similar to those of the Ozaukee soil

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

530D3—Ozaukee silty clay loam, 6 to 12 percent slopes, severely eroded

Setting

Landform: Moraines and till plains
Position on the landform: Backslopes
Slope range: 6 to 12 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Ozaukee and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that are moderately eroded
- soils that contain more sand and less clay in the upper part of the profile
- soils that have slopes of less than 6 percent or more than 12 percent

Dissimilar soils:
- the poorly drained Ashkum soils in depressions and drainageways
- the somewhat poorly drained Beecher soils in the lower positions on the landform
- calcareous soils in positions on the landform similar to those of the Ozaukee soil

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

530E—Ozaukee silt loam, 12 to 20 percent slopes

Setting

Landform: Moraines and till plains
Position on the landform: Backslopes
Slope range: 12 to 20 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Ozaukee and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that are moderately eroded
- soils that contain more sand and less clay in the upper part of the profile
- soils that have slopes of less than 12 percent or more than 20 percent

Dissimilar soils:
- the poorly drained Ashkum soils in depressions and drainageways
- the somewhat poorly drained Beecher soils in the lower positions on the landform
- calcareous soils in positions on the landform similar to those of the Ozaukee soil

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Palms Series

Drainage class: Very poorly drained
Permeability: Moderate
Landform: Moraines, outwash plains, and stream terraces
Parent material: Organic material over loamy deposits
Slope range: 0 to 2 percent
Taxonomic classification: Loamy, mixed, euic, mesic Terric Medisaprists

Typical Pedon for MLRA 95B

Typical pedon of Palms muck, 0 to 2 percent slopes, 115 feet south and 1,020 feet east of the northwest corner of sec. 15, T. 45 N., R. 4 E.

Oap—0 to 6 inches; sapric material, black (N 2.5/0) broken face and rubbed, black (10YR 2/1) dry; about 25 percent fiber, less than 5 percent rubbed; moderate fine granular structure; friable; about 10 percent mineral material; neutral; clear smooth boundary.

Oa1—6 to 10 inches; sapric material, black (N 2.5/0) broken face and rubbed; about 7 percent fiber, less than 5 percent rubbed; moderate fine angular blocky structure; friable; about 15 percent mineral material; neutral; clear smooth boundary.

Oa2—10 to 32 inches; sapric material, black (N 2.5/0) broken face and rubbed; about 5 percent fiber, less than 5 percent rubbed; massive; friable; about 10 percent mineral material; neutral; clear smooth boundary.

Cg—32 to 60 inches; 60 percent greenish gray (5G 5/1) and 40 percent gray (5Y 5/1) silty clay loam; massive; friable; slightly alkaline.

MLRA Series Range in Characteristics

Thickness of organic deposits: 16 to 51 inches

Surface tier:
Hue—7.5YR, 10YR, or N
Value—2 or 3
Chroma—0 to 2

Subsurface tier:
Hue—7.5YR, 10YR, or N
Value—2 to 4
Chroma—0 to 3

Cg horizon:
Hue—10YR, 2.5Y, 5Y, 5GY, 5G, or N
Value—4 to 6
Chroma—0 to 3
Texture—silt loam, loam, silty clay loam, sandy loam, clay loam, or the gravelly analogs of these textures
Content of gravel—less than 25 percent

100A—Palms muck, 0 to 2 percent slopes

Setting

Landform: Moraines, outwash plains, and stream terraces
Position on the landform: Depressions
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Palms and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have organic deposits greater than 51 inches thick
- soils in which the surface layer has a lower content of organic matter
- soils that are sandy in the lower part of the profile
- soils that contain carbonates at or near the surface

Dissimilar soils:
- the poorly drained Drummer, Dunham, Pella, and Selmass soils in the slightly higher positions on the landform

Management

For general and detailed information about

managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

1100A—Palms muck, 0 to 2 percent slopes, undrained

Setting

Landform: Moraines, outwash plains, and stream terraces
Position on the landform: Depressions
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Palms and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have organic deposits greater than 51 inches thick
- soils in which the surface layer has a lower content of organic matter
- soils that are sandy in the lower part of the profile
- soils that contain carbonates at or near the surface

Dissimilar soils:
- the poorly drained Drummer, Dunham, Pella, and Selmass soils in the slightly higher positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Parmod Series

Drainage class: Well drained
Permeability: Moderate
Landform: Moraines and till plains
Parent material: Thin mantle of silty material and the underlying loamy till
Slope range: 2 to 5 percent
Taxonomic classification: Fine-loamy, mixed, mesic Typic Argiudolls

Typical Pedon for MLRA 95B

Typical pedon of Parmod silt loam, 2 to 5 percent slopes, 696 feet north and 96 feet west of the southeast corner of sec. 32, T. 21 N., R. 10 E.

Ap—0 to 8 inches; very dark gray (10YR 3/1) silt loam, dark grayish brown (10YR 4/2) dry; weak fine granular structure; friable; few fine roots; slightly acid; abrupt smooth boundary.

AB—8 to 12 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; moderate medium subangular blocky structure parting to moderate fine granular; friable; few fine roots; slightly acid; clear smooth boundary.

Bt1—12 to 19 inches; dark brown (10YR 4/3) silty clay loam; moderate medium subangular blocky structure; friable; few fine roots; common distinct dark gray (10YR 3/1) organo-clay films on faces of peds; moderately acid; clear smooth boundary.

2Bt2—19 to 26 inches; brown (10YR 4/3) clay loam; moderate medium subangular blocky structure; friable; few fine roots; common distinct dark brown (10YR 3/3) clay films on faces of peds; slightly acid; clear smooth boundary.

2Bt3—26 to 38 inches; dark yellowish brown (10YR 4/4) clay loam; moderate medium subangular blocky structure; friable; few fine roots; common distinct dark brown (10YR 3/3) clay films on faces of peds; many fine black (7.5YR 2.5/1) iron and manganese oxide concretions throughout; 3 percent pebbles (2 to 5 millimeters in diameter); slightly acid; abrupt smooth boundary.

2C—38 to 60 inches; yellowish brown (10YR 5/4) loam; massive; friable; few fine roots; common fine black (7.5YR 2.5/1) iron and manganese oxide concretions throughout; 10 percent pebbles (2 to 10 millimeters in diameter) and 2 percent pebbles (more than 10 millimeters in diameter); strongly effervescent; slightly alkaline.

MLRA Series Range in Characteristics

Thickness of the mollic epipedon: 10 to 18 inches
Thickness of silty material: Less than 20 inches
Depth to carbonates: 20 to 40 inches
Thickness of the solum: 24 to 40 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3

Chroma—1 to 3
Texture—silt loam or loam

Bt or 2Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 to 6
Texture—clay loam, loam, or silty clay loam

2C horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 6
Texture—loam or sandy loam

636B—Parmod silt loam, 2 to 5 percent slopes

Setting

Landform: Moraines and till plains
Position on the landform: Summits, shoulders, and backslopes
Slope range: 2 to 5 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the "Soil Properties" section in Part II of this publication.

Composition

Parmod and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have no subsurface layer
- soils that have a seasonal high water table at a depth of less than 6 feet
- soils that contain carbonates at a depth of less than 20 inches or more than 40 inches
- soils that contain less sand and more silt in the middle part of the subsoil

Dissimilar soils:
- the somewhat poorly drained Lismod soils in the lower positions on the landform
- the poorly drained Pella soils in drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- "Agronomy" section
- "Wildlife Habitat" section
- "Engineering" section
- "Soil Properties" section

Parr Series

Drainage class: Well drained
Permeability: Moderate in the upper part and moderately slow in the lower part
Landform: Moraines and till plains
Parent material: Thin mantle of silty material and the underlying loamy till
Slope range: 2 to 10 percent
Taxonomic classification: Fine-loamy, mixed, mesic Oxyaquic Argiudolls
Taxadjunct features: Parr silt loam, 5 to 10 percent slopes, eroded, has a mollic epipedon that is less than 10 inches thick. This soil is classified as a fine-loamy, mixed, mesic Oxyaquic Hapludalf.

Typical Pedon for MLRA 95B

Typical pedon of Parr silt loam, 2 to 5 percent slopes, 2,186 feet north and 2,604 feet west of the southeast corner of sec. 23, T. 44 N., R. 6 E.

Ap1—0 to 4 inches; very dark brown (10YR 2/2) silt loam, grayish brown (10YR 5/2) dry; weak fine subangular blocky structure parting to moderate fine granular; friable; common very fine roots; common distinct black (10YR 2/1) organic coatings on faces of peds; slightly acid; abrupt smooth boundary.
Ap2—4 to 11 inches; very dark brown (10YR 2/2) silt loam, grayish brown (10YR 5/2) dry; moderate medium subangular blocky structure parting to weak medium granular; friable; common very fine roots; common distinct black (10YR 2/1) organic coatings on faces of peds; 1 percent gravel; neutral; abrupt smooth boundary.
Bt1—11 to 17 inches; brown (10YR 4/3) silty clay loam; weak medium prismatic structure parting to moderate fine and medium subangular blocky; friable; common very fine roots; few distinct dark brown (10YR 3/3) clay films on faces of peds; common distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds and in pores; 1 percent gravel; slightly acid; clear smooth boundary.
2Bt2—17 to 21 inches; dark yellowish brown (10YR 4/4) clay loam; weak medium prismatic structure parting to moderate fine and medium subangular blocky; friable; common very fine roots; few distinct brown (10YR 4/3) and dark brown (10YR 3/3) clay films on faces of peds; few distinct very dark grayish brown (10YR 3/2) organic coatings

on faces of peds and in pores; 3 percent gravel; slightly acid; clear smooth boundary.

2Bt3—21 to 32 inches; brown (7.5YR 4/4) clay loam; moderate medium prismatic structure parting to moderate medium subangular blocky; friable; common very fine roots; few distinct brown (7.5YR 4/3) and dark brown (7.5YR 3/3) clay films on faces of peds; very few distinct dark brown (7.5YR 3/2) organic coatings in root channels and in pores; common fine black (7.5YR 2.5/1) very weakly cemented iron and manganese oxide concretions throughout; 3 percent gravel; neutral; clear smooth boundary.

2BCt—32 to 36 inches; brown (7.5YR 5/4) loam; weak medium prismatic structure parting to weak medium subangular blocky; friable; common very fine roots; very few distinct dark brown (7.5YR 3/3) clay films in root channels and in pores; very few distinct brown (7.5YR 4/4) clay films on faces of peds; common fine black (7.5YR 2.5/1) very weakly cemented iron and manganese oxide concretions throughout; common fine distinct strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; 3 percent gravel; slightly effervescent; slightly alkaline; clear smooth boundary.

2C—36 to 60 inches; brown (7.5YR 5/4) loam; massive; firm; common very fine roots; very few distinct dark brown (7.5YR 3/3) linings in root channels and in pores; common medium white (7.5YR 8/1) soft masses of carbonates; common medium and coarse distinct strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; common fine and medium faint brown (7.5YR 5/3) iron depletions in the matrix; 4 percent gravel; strongly effervescent; slightly alkaline.

MLRA Series Range in Characteristics

Thickness of the mollic epipedon: 10 to 15 inches
Thickness of silty material: Less than 18 inches
Depth to carbonates: 20 to 40 inches
Thickness of the solum: 24 to 40 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 to 3
Texture—silt loam or loam

Bt and 2Bt horizons:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 or 4
Texture—clay loam, loam, or silty clay loam

2C horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 or 4
Texture—loam

221B—Parr silt loam, 2 to 5 percent slopes

Setting

Landform: Moraines and till plains
Position on the landform: Summits, shoulders, and backslopes
Slope range: 2 to 5 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Parr and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a thinner subsurface layer
- soils that have a seasonal high water table at a depth of more than 3.5 feet
- soils that contain carbonates at a depth of less than 20 inches or more than 40 inches
- soils that contain less sand in the upper one-half of the subsoil

Dissimilar soils:
- the somewhat poorly drained Lisbon soils in the lower positions on the landform
- the poorly drained Pella soils in drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

221C2—Parr silt loam, 5 to 10 percent slopes, eroded

Setting

Landform: Moraines and till plains
Position on the landform: Summits, shoulders, and backslopes

Slope range: 5 to 10 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Parr and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a seasonal high water table at a depth of more than 3.5 feet
- soils that contain carbonates at a depth of less than 20 inches or more than 40 inches
- soils that contain less sand in the upper one-half of the subsoil
- soils that have slopes of less than 5 percent

Dissimilar soils:
- the somewhat poorly drained Lisbon soils in the lower positions on the landform
- the poorly drained Pella soils in drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Pella Series

Drainage class: Poorly drained
Permeability: Moderate
Landform: Moraines, till plains, and outwash plains
Parent material: Silty material and the underlying loamy outwash
Slope range: 0 to 2 percent
Taxonomic classification: Fine-silty, mixed, mesic Typic Endoaquolls

Typical Pedon for MLRA 95B

Typical pedon of Pella silty clay loam, 0 to 2 percent slopes, 314 feet north and 2,430 feet east of the southwest corner of sec. 7, T. 45 N., R. 7 E.

Ap—0 to 5 inches; black (N 2.5/0) silty clay loam, dark gray (2.5Y 4/1) dry; weak fine subangular blocky structure parting to moderate fine granular; friable; many very fine roots; slightly acid; clear smooth boundary.

A—5 to 14 inches; black (N 2.5/0) silty clay loam, dark gray (10YR 4/1) dry; weak fine and medium subangular blocky structure; friable; common very fine roots; slightly acid; clear smooth boundary.

AB—14 to 18 inches; very dark gray (10YR 3/1) silty clay loam, dark grayish brown (10YR 4/2) dry; weak fine and medium subangular blocky structure; friable; common very fine roots; few distinct black (10YR 2/1) organic coatings on faces of peds; few fine dark reddish brown (5YR 3/3) very weakly cemented iron oxide concretions throughout; neutral; clear smooth boundary.

Bg—18 to 22 inches; dark grayish brown (2.5Y 4/2) silty clay loam; weak fine and medium subangular blocky structure; friable; common very fine roots; common distinct black (10YR 2/1) organic coatings on faces of peds and in pores; few fine dark reddish brown (5YR 3/3) very weakly cemented iron oxide concretions throughout; common fine distinct olive brown (2.5Y 4/4) masses of iron accumulation in the matrix; neutral; clear smooth boundary.

Btg1—22 to 29 inches; grayish brown (2.5Y 5/2) silty clay loam; moderate fine and medium subangular blocky structure; firm; common very fine roots; few distinct dark grayish brown (2.5Y 4/2) clay films on faces of peds; few distinct black (10YR 2/1) organic coatings on faces of peds and in pores; common fine strong brown (7.5YR 5/6) very weakly cemented iron oxide concretions throughout; common fine and medium prominent yellowish brown (10YR 5/4 and 5/6) masses of iron accumulation in the matrix; neutral; gradual smooth boundary.

Btg2—29 to 39 inches; light brownish gray (2.5Y 6/2) silty clay loam; weak medium prismatic structure parting to weak medium subangular blocky; firm; common very fine roots; few distinct grayish brown (2.5Y 5/2) clay films on faces of peds; very few distinct dark grayish brown (2.5Y 4/2) clay films and black (10YR 2/1) organic coatings on faces of peds and in pores; common fine brown (7.5YR 4/4) very weakly cemented iron oxide concretions throughout; common medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; 1 percent gravel; slightly effervescent; slightly alkaline; clear smooth boundary.

2BCtg—39 to 50 inches; light brownish gray (2.5Y 6/2) clay loam; weak medium and coarse subangular blocky structure; firm; few very fine roots; very few distinct dark grayish brown (2.5Y 4/2) clay films on

faces of peds and in pores; few fine brown (7.5YR 4/4) very weakly cemented iron oxide concretions throughout; common fine prominent strong brown (7.5YR 5/6) and common fine and medium prominent reddish yellow (7.5YR 6/8) masses of iron accumulation in the matrix; 3 percent gravel; strongly effervescent; slightly alkaline; gradual smooth boundary.

2C—50 to 60 inches; light yellowish brown (2.5Y 6/4), stratified very fine sandy loam and loamy sand; massive and single grain; very friable; common fine and medium distinct olive yellow (2.5Y 6/6 and 6/8) masses of iron accumulation in the matrix; 4 percent gravel; violently effervescent; moderately alkaline.

MLRA Series Range in Characteristics

Thickness of the mollic epipedon: 10 to 20 inches
Thickness of silty material: 20 to 40 inches
Depth to carbonates: 16 to 40 inches
Thickness of the solum: 30 to 50 inches

Ap or A horizon:
Hue—10YR, 2.5Y, or N
Value—2 or 3
Chroma—0 to 2
Texture—silty clay loam or silt loam

Bg or Btg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 or 2
Texture—silty clay loam

2BCtg or 2Btg horizon:
Hue—2.5Y or 5Y
Value—5 or 6
Chroma—1 to 6
Texture—loam, clay loam, silt loam, silty clay loam, or sandy loam

2Cg or 2C horizon:
Hue—10YR, 2.5Y, or 5Y
Value—5 or 6
Chroma—1 to 6
Texture—loam, silt loam, sandy loam, or loamy sand
Content of gravel—less than 15 percent

153A—Pella silty clay loam, 0 to 2 percent slopes

Setting

Landform: Moraines, till plains, and outwash plains
Position on the landform: Footslopes and toeslopes
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the "Soil Properties" section in Part II of this publication.

Composition

Pella and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a thinner subsurface layer
- soils that contain loamy outwash at a depth of more than 40 inches
- soils that contain loamy till in the lower part of the profile
- soils that contain sandy and gravelly deposits in the lower part of the profile

Dissimilar soils:
- the somewhat poorly drained Brenton, Herbert, and Lisbon soils in the higher positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- "Agronomy" section
- "Wildlife Habitat" section
- "Engineering" section
- "Soil Properties" section

153A+—Pella silt loam, 0 to 2 percent slopes, overwash

Setting

Landform: Moraines, till plains, and outwash plains
Position on the landform: Footslopes and toeslopes
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the "Soil Properties" section in Part II of this publication.

Composition

Pella and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that contain loamy till in the lower part of the profile
- soils that contain sandy and gravelly deposits in the lower part of the profile

• soils that contain loamy outwash at a depth of more than 40 inches
• soils that are overlain by more than 20 inches of recent, light-colored deposition

Dissimilar soils:
• the somewhat poorly drained Brenton, Herbert, and Lisbon soils in the higher positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

• “Agronomy” section
• “Wildlife Habitat” section
• “Engineering” section
• “Soil Properties” section

1153A—Pella silty clay loam, 0 to 2 percent slopes, undrained

Setting

Landform: Moraines, till plains, and outwash plains
Position on the landform: Depressions
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Pella and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
• soils that have a thinner subsurface layer
• soils that contain loamy outwash at a depth of more than 40 inches
• soils that contain loamy till in the lower part of the profile
• soils that contain sandy and gravelly deposits in the lower part of the profile

Dissimilar soils:
• the somewhat poorly drained Brenton, Herbert, and Lisbon soils in the higher positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

• “Forestland” section
• “Wildlife Habitat” section
• “Engineering” section
• “Soil Properties” section

Peotone Series

Drainage class: Very poorly drained
Permeability: Moderately slow
Landform: Moraines, till plains, and outwash plains
Parent material: Silty colluvium and the underlying drift
Slope range: 0 to 2 percent
Taxonomic classification: Fine, smectitic, mesic Cumulic Vertic Endoaquolls

Typical Pedon for MLRA 95B

Typical pedon of Peotone silty clay loam, 0 to 2 percent slopes, undrained, 1,300 feet north and 2,300 feet east of the southwest corner of sec. 27, T. 43 N., R. 7 E.

A1—0 to 5 inches; black (10YR 2/1) silty clay loam, gray (10YR 5/1) dry; weak fine granular structure; firm; many very fine to coarse roots; neutral; abrupt smooth boundary.

A2—5 to 12 inches; black (N 2.5/0) silty clay loam, dark grayish brown (2.5Y 4/2) dry; moderate medium granular structure; firm; many very fine roots; common fine prominent dark red (2.5YR 4/6) masses of iron accumulation in the matrix; neutral; clear wavy boundary.

A3—12 to 22 inches; black (N 2.5/0) silty clay loam, dark grayish brown (2.5Y 4/2) dry; moderate medium granular structure; firm; common very fine roots; common fine prominent brown (10YR 4/3) masses of iron accumulation in the matrix; neutral; clear wavy boundary.

Bg1—22 to 28 inches; black (N 2.5/0) silty clay loam, dark grayish brown (2.5Y 4/2) dry; moderate very fine and fine subangular blocky structure; firm; common very fine roots; common fine prominent brown (10YR 4/3) masses of iron accumulation in the matrix; neutral; abrupt smooth boundary.

Bg2—28 to 43 inches; 65 percent gray (5Y 6/1), 30 percent gray (5Y 5/1), and 5 percent light olive brown (2.5Y 5/4) silty clay loam; weak fine and medium subangular blocky structure; firm; common very fine roots; strongly effervescent; slightly alkaline; clear wavy boundary.

Cg—43 to 60 inches; 50 percent olive gray (5Y 5/2), 45 percent gray (5Y 5/1), and 5 percent light olive brown (2.5Y 5/4) silty clay loam; massive; firm; 2 percent gravel; strongly effervescent; moderately alkaline.

MLRA Series Range in Characteristics

Thickness of the mollic epipedon: 24 to 36 inches
Depth to carbonates: Greater than 24 inches
Thickness of the solum: 38 to 60 inches

Ap or A horizon:
Hue—10YR, 2.5Y, or N
Value—2 or 3
Chroma—0 or 1
Texture—silty clay loam

Bg horizon:
Hue—10YR, 2.5Y, 5Y, or N
Value—2 to 6
Chroma—0 to 2
Texture—silty clay loam or silty clay

Cg horizon:
Hue—10YR, 2.5Y, 5Y, or N
Value—4 to 6
Chroma—0 to 2
Texture—silty clay loam, silt loam, clay loam, or loam

330A—Peotone silty clay loam, 0 to 2 percent slopes

Setting

Landform: Moraines, till plains, and outwash plains
Position on the landform: Depressions
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Peotone and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that are lighter colored in the upper part of the subsoil
- soils that contain less clay in the subsurface layers and subsoil

Dissimilar soils:
- the somewhat poorly drained Elburn and Elliott soils in the higher positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

1330A—Peotone silty clay loam, 0 to 2 percent slopes, undrained

Setting

Landform: Moraines, till plains, and outwash plains
Position on the landform: Depressions
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Peotone and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that are lighter colored in the upper part of the subsoil
- soils that contain less clay in the subsurface layers and subsoil

Dissimilar soils:
- the somewhat poorly drained Elburn and Elliott soils in the higher positions on the landform
- Houghton and Palms soils in the lower positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Piscasaw Series

Drainage class: Well drained
Permeability: Moderate
Landform: Moraines and till plains
Parent material: Silty material and the underlying loamy till
Slope range: 2 to 4 percent
Taxonomic classification: Fine-silty, mixed, mesic Typic Hapludalfs

Typical Pedon for MLRA 95B

Typical pedon of Piscasaw silt loam, 2 to 4 percent slopes, 2,350 feet north and 900 feet east of the southwest corner of sec. 20, T. 46 N., R. 5 E.

Ap—0 to 9 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate fine granular structure; friable; common very fine roots; common distinct dark brown (10YR 3/3) organic coatings on faces of peds; neutral; abrupt smooth boundary.

EB—9 to 12 inches; 70 percent brown (10YR 4/3) and 30 percent dark yellowish brown (10YR 4/4) silt loam; moderate medium platy structure parting to weak fine subangular blocky; friable; common very fine roots; few distinct dark brown (10YR 3/3) organic coatings on faces of peds; common distinct light gray (10YR 7/2 dry) clay depletions on faces of peds; neutral; clear smooth boundary.

Bt1—12 to 17 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate very fine and fine subangular blocky structure; friable; common very fine roots; common distinct brown (10YR 4/3) clay films and light gray (10YR 7/2 dry) clay depletions on faces of peds and in pores; slightly acid; clear smooth boundary.

Bt2—17 to 26 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate fine and medium subangular blocky structure; friable; common very fine roots; many distinct brown (10YR 4/3) clay films on faces of peds and in pores; common distinct light gray (10YR 7/2 dry) clay depletions on faces of peds and in pores; strongly acid; clear smooth boundary.

2Bt3—26 to 36 inches; brown (7.5YR 4/4) clay loam; moderate medium subangular blocky structure; firm; few very fine roots; common distinct brown (7.5YR 4/3) clay films and very pale brown (10YR 7/3 dry) clay depletions on faces of peds and in pores; 2 percent gravel; moderately acid; gradual smooth boundary.

2Bt4—36 to 46 inches; brown (7.5YR 4/4) clay loam; weak medium prismatic structure parting to moderate medium subangular blocky; firm; few very fine roots; common distinct brown (7.5YR 4/3) clay films on faces of peds and in pores; few distinct very pale brown (10YR 7/3 dry) clay depletions on faces of peds and in pores; 3 percent gravel; slightly acid; gradual smooth boundary.

2BC—46 to 51 inches; brown (7.5YR 5/4) loam; weak medium prismatic structure parting to weak medium subangular blocky; firm; few very fine roots; few distinct brown (7.5YR 4/3) clay films in root channels and in pores; common fine strong brown (7.5YR 5/8) very weakly cemented iron oxide concretions throughout; 4 percent gravel; slightly alkaline; gradual smooth boundary.

2C—51 to 62 inches; brown (7.5YR 5/4) loam; massive; firm; few distinct brown (7.5YR 4/3) linings in root channels and in pores; common fine strong brown (7.5YR 5/8) very weakly cemented iron oxide concretions throughout; 8 percent gravel; slightly effervescent; slightly alkaline.

MLRA Series Range in Characteristics

Thickness of silty material: 22 to 40 inches
Depth to carbonates: 36 to 60 inches
Thickness of the solum: 40 to 65 inches

Ap or A horizon:
Hue—10YR
Value—3 or 4 (6 or 7 dry)
Chroma—2 or 3
Texture—silt loam

E horizon (if it occurs):
Hue—10YR
Value—4 or 5
Chroma—2 to 4
Texture—silt loam

Bt horizon:
Hue—10YR
Value—4 or 5
Chroma—3 or 4
Texture—silty clay loam or silt loam

2Bt or 2BC horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 6
Texture—clay loam, sandy clay loam, or loam
Content of gravel—2 to 10 percent

2C horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 6
Texture—loam, sandy loam, or fine sandy loam
Content of gravel—3 to 15 percent

543B—Piscasaw silt loam, 2 to 4 percent slopes

Setting

Landform: Moraines and till plains
Position on the landform: Summits, shoulders, and backslopes
Slope range: 2 to 4 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Piscasaw and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that contain more sand in the upper part of the subsoil
- soils that have a seasonal high water table at a depth of less than 6 feet
- soils that have slopes of less than 2 percent or more than 4 percent
- soils that contain carbonates at a depth of less than 36 inches
- soils that have a darker surface layer

Dissimilar soils:
- the somewhat poorly drained Torox soils in the slightly lower positions on the landform
- the poorly drained Pella soils in drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

865—Pits, gravel

Setting

This unit consists of nearly level to gently sloping areas from which gravel has been removed. The pits have nearly vertical sidewalls. They contain sandy and gravelly soil material. Some of the pits are active, but some have been abandoned. Some contain water.

Major Use

- The larger abandoned pits are used as recreational areas.

Proctor Series

Drainage class: Well drained
Permeability: Moderate
Landform: Outwash plains, stream terraces, and moraines
Parent material: Silty material and the underlying loamy outwash
Slope range: 0 to 5 percent
Taxonomic classification: Fine-silty, mixed, mesic Typic Argiudolls

Typical Pedon for MLRA 95B

Typical pedon of Proctor silt loam, 0 to 2 percent slopes, 396 feet north and 1,485 feet east of the southwest corner of sec. 12, T. 42 N., R. 5 E.

Ap—0 to 11 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak very fine granular structure; very friable; common very fine roots; neutral; abrupt smooth boundary.
Bt1—11 to 16 inches; dark yellowish brown (10YR 4/4) silty clay loam; weak very fine and fine subangular blocky structure; friable; common very fine roots; many distinct brown (10YR 4/3) clay films on faces of peds and in pores; few distinct dark brown (10YR 3/3) organic coatings in root channels and in pores; neutral; clear smooth boundary.
Bt2—16 to 27 inches; dark yellowish brown (10YR 4/4) silty clay loam; weak fine prismatic structure parting to moderate fine and medium subangular blocky; friable; common very fine roots; many distinct brown (10YR 4/3) clay films on faces of peds and in pores; moderately acid; gradual smooth boundary.
2Bt3—27 to 32 inches; yellowish brown (10YR 5/4) clay loam; moderate fine and medium subangular blocky structure; friable; common very fine roots; many distinct brown (10YR 4/3) clay films on faces of peds; moderately acid; clear smooth boundary.
2Bt4—32 to 38 inches; yellowish brown (10YR 5/4) loam; weak medium subangular blocky structure; friable; common very fine roots; common distinct brown (10YR 4/3) clay films on faces of peds; common fine prominent strong brown (7.5YR 4/6) and common fine and medium distinct brown (10YR 5/3) masses of iron accumulation in the matrix; moderately acid; clear smooth boundary.
2Bt5—38 to 44 inches; yellowish brown (10YR 5/6) sandy loam; weak medium subangular blocky structure; very friable; common very fine roots; few distinct brown (10YR 4/3) clay films on faces of peds; common fine distinct strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; moderately acid; gradual wavy boundary.
2C—44 to 73 inches; 50 percent yellowish brown

(10YR 5/6) and 50 percent dark yellowish brown (10YR 4/4), stratified sandy loam, loam, and loamy sand; massive; very friable; few fine distinct grayish brown (10YR 5/2) iron depletions in the matrix; slightly acid.

MLRA Series Range in Characteristics

Thickness of the mollic epipedon: 10 to 18 inches
Thickness of silty material: 20 to 40 inches
Depth to carbonates: Greater than 40 inches
Thickness of the solum: 40 to 65 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 to 3
Texture—silt loam

Bt horizon:
Hue—10YR
Value—4 or 5
Chroma—3 or 4
Texture—silty clay loam

2Bt horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 6
Texture—loam, silt loam, sandy loam, clay loam, or sandy clay loam

2C horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 6
Texture—loam, silt loam, sandy loam, or loamy sand
Content of gravel—less than 15 percent

148A—Proctor silt loam, 0 to 2 percent slopes

Setting

Landform: Outwash plains, stream terraces, and moraines
Position on the landform: Summits
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Proctor and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a thinner surface layer
- soils that contain loamy outwash at a depth of more than 40 inches
- soils that have a seasonal high water table at a depth of less than 6 feet
- soils that contain more sand in the upper part of the subsoil
- soils that contain sandy and gravelly deposits in the lower part of the profile

Dissimilar soils:
- the somewhat poorly drained Brenton and Millbrook soils in the lower positions on the landform
- the poorly drained Pella soils in depressions and drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

148B—Proctor silt loam, 2 to 5 percent slopes

Setting

Landform: Outwash plains, stream terraces, and moraines
Position on the landform: Summits, shoulders, and backslopes
Slope range: 2 to 5 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Proctor and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have slopes of less than 2 percent

- soils that have a thinner surface layer
- soils that contain loamy outwash at a depth of more than 40 inches
- soils that contain more sand in the upper part of the subsoil
- soils that contain sandy and gravelly deposits in the lower part of the profile

Dissimilar soils:
- the somewhat poorly drained Brenton and Millbrook soils in the lower positions on the landform
- the poorly drained Pella soils in depressions and drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- "Agronomy" section
- "Wildlife Habitat" section
- "Engineering" section
- "Soil Properties" section

Ringwood Series

Drainage class: Well drained
Permeability: Moderate
Landform: Moraines and till plains
Parent material: Silty material and the underlying loamy till
Slope range: 0 to 4 percent
Taxonomic classification: Fine-loamy, mixed, mesic Typic Argiudolls

Typical Pedon for MLRA 95B

Typical pedon of Ringwood silt loam, 2 to 4 percent slopes, 46 feet north and 280 feet east of the southwest corner of sec. 35, T. 46 N., R. 8 E.

Ap—0 to 8 inches; black (10YR 2/1) silt loam, dark grayish brown (10YR 4/2) dry; weak fine subangular blocky structure parting to moderate fine granular; friable; common very fine and fine roots; neutral; abrupt smooth boundary.

A—8 to 12 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; moderate fine subangular blocky structure; friable; common very fine roots; common distinct black (10YR 2/1) organic coatings on faces of peds and in pores; neutral; clear smooth boundary.

Bt1—12 to 15 inches; brown (10YR 4/3) silty clay loam; moderate fine and medium subangular blocky structure; friable; common very fine roots; common distinct dark brown (10YR 3/3) and very dark grayish brown (10YR 3/2) organo-clay films on faces of peds and in pores; few distinct black (10YR 2/1) organic coatings in root channels and in pores; moderately acid; clear smooth boundary.

Bt2—15 to 20 inches; brown (10YR 4/3) silty clay loam; moderate fine and medium subangular blocky structure; friable; common very fine roots; common distinct dark brown (10YR 3/3) organo-clay films on faces of peds and in pores; moderately acid; clear smooth boundary.

2Bt3—20 to 27 inches; dark yellowish brown (10YR 4/4) clay loam; moderate medium subangular blocky structure; friable; common very fine roots; common distinct brown (10YR 4/3) clay films on faces of peds and in pores; 3 percent gravel; neutral; clear smooth boundary.

2Bt4—27 to 36 inches; dark yellowish brown (10YR 4/4) clay loam; weak fine prismatic structure parting to weak medium subangular blocky; friable; common very fine roots; common distinct brown (10YR 4/3) clay films on faces of peds and in pores; common medium very dark grayish brown (10YR 3/2) wormcasts; 3 percent gravel; slightly alkaline; clear smooth boundary.

2BC—36 to 40 inches; yellowish brown (10YR 5/4) sandy loam; weak fine and medium subangular blocky structure; friable; common very fine roots; few distinct brown (10YR 4/3) clay films in root channels and in pores; 10 percent gravel; slightly effervescent; slightly alkaline; gradual wavy boundary.

2C1—40 to 52 inches; yellowish brown (10YR 5/4) sandy loam; massive; very friable; few very fine roots; 12 percent gravel; strongly effervescent; slightly alkaline; gradual wavy boundary.

2C2—52 to 60 inches; yellowish brown (10YR 5/4) sandy loam; massive; very friable; 14 percent gravel; violently effervescent; moderately alkaline.

MLRA Series Range in Characteristics

Thickness of the mollic epipedon: 10 to 18 inches
Thickness of silty material: 15 to 30 inches
Depth to carbonates: 27 to 50 inches
Thickness of the solum: 30 to 50 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 to 3
Texture—silt loam

Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 or 4

Texture—silty clay loam or silt loam

2Bt or 2BC horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 to 6
Texture—loam, clay loam, or sandy clay loam

2C horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 6
Texture—sandy loam or gravelly sandy loam
Content of gravel—less than 35 percent

297A—Ringwood silt loam, 0 to 2 percent slopes

Setting

Landform: Moraines and till plains
Position on the landform: Summits
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Ringwood and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have no subsurface layer
- soils that contain less sand and more silt in the upper one-half of the profile
- soils that contain more clay in the lower part of the profile
- soils that contain carbonates at a depth of more than 50 inches

Dissimilar soils:
- the somewhat poorly drained Elburn and Virgil soils in the lower positions on the landform
- the poorly drained Pella soils in drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

297B—Ringwood silt loam, 2 to 4 percent slopes

Setting

Landform: Moraines and till plains
Position on the landform: Summits, shoulders, and backslopes
Slope range: 2 to 4 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Ringwood and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have no subsurface layer
- soils that contain less sand and more silt in the upper one-half of the profile
- soils that contain more clay in the lower part of the profile
- soils that contain carbonates at a depth of more than 50 inches
- soils that have slopes of less than 2 percent

Dissimilar soils:
- the somewhat poorly drained Elburn and Virgil soils in the lower positions on the landform
- the poorly drained Pella soils in drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Rockton Series

Drainage class: Well drained
Permeability: Moderate
Landform: Knolls
Parent material: Loamy drift and the underlying limestone residuum over limestone bedrock
Slope range: 2 to 6 percent
Taxonomic classification: Fine-loamy, mixed, mesic Typic Argiudolls

Typical Pedon for MLRA 95B

Typical pedon of Rockton silt loam, 2 to 6 percent slopes, 1,635 feet south and 195 feet east of the northwest corner of sec. 31, T. 44 N., R. 5 E.

Ap—0 to 8 inches; black (10YR 2/1) silt loam, dark gray (10YR 4/1) dry; weak medium subangular blocky structure parting to weak fine granular; friable; common very fine roots; neutral; clear smooth boundary.

A—8 to 11 inches; very dark brown (10YR 2/2) silt loam, dark grayish brown (10YR 4/2) dry; weak fine and medium subangular blocky structure parting to moderate fine granular; friable; common very fine roots; many distinct black (10YR 2/1) organic coatings on faces of peds; neutral; abrupt smooth boundary.

BA—11 to 14 inches; dark brown (10YR 3/3) loam, brown (10YR 5/3) dry; weak fine and medium subangular blocky structure; friable; common very fine roots; common distinct black (10YR 2/1) organic coatings on faces of peds; 1 percent gravel; neutral; abrupt smooth boundary.

Bt1—14 to 18 inches; brown (10YR 4/3) clay loam; moderate fine and medium subangular blocky structure; friable; common very fine roots; few distinct dark brown (10YR 3/3) clay films on faces of peds; common distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; 1 percent gravel; neutral; abrupt smooth boundary.

Bt2—18 to 24 inches; dark yellowish brown (10YR 4/4) clay loam; weak medium prismatic structure parting to moderate fine and medium subangular blocky; firm; common very fine roots; few distinct brown (10YR 4/3) and dark brown (10YR 3/3) clay films on faces of peds; few distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds and in pores; 3 percent gravel; neutral; clear smooth boundary.

Bt3—24 to 31 inches; dark yellowish brown (10YR 4/4) sandy clay loam; weak medium prismatic structure parting to moderate medium subangular blocky; firm; common very fine roots; few distinct brown (10YR 4/3) clay films on faces of peds; 5 percent gravel; neutral; abrupt smooth boundary.

2BC—31 to 35 inches; 60 percent yellowish brown (10YR 5/6) and 40 percent brownish yellow (10YR 6/6) clay loam; weak medium subangular blocky structure; firm; common very fine roots; 10 percent gravel; strongly effervescent; slightly alkaline; abrupt smooth boundary.

2R—35 inches; limestone bedrock.

MLRA Series Range in Characteristics

Thickness of the mollic epipedon: 10 to 15 inches
Depth to carbonates: 20 to 40 inches
Depth to bedrock: 20 to 40 inches
Thickness of the solum: 20 to 40 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—silt loam or loam

Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 or 4
Texture—clay loam, loam, or sandy clay loam

2Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 to 6
Texture—clay loam, silty clay loam, silty clay, or clay

503B—Rockton silt loam, 2 to 6 percent slopes

Setting

Landform: Knolls
Position on the landform: Summits, shoulders, and backslopes
Slope range: 2 to 6 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Rockton and similar soils: 100 percent

Similar soils:
- soils that are moderately eroded
- soils that contain less sand in the upper one-half of the subsoil
- soils that have slopes of less than 2 percent or more than 6 percent
- soils that have bedrock at a depth of less than 20 inches or more than 40 inches

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Rodman Series

Drainage class: Excessively drained
Permeability: Very rapid
Landform: Stream terraces, kames, outwash plains, and moraines
Parent material: Gravelly drift
Slope range: 12 to 30 percent
Taxonomic classification: Sandy-skeletal, mixed, mesic Typic Hapludolls

Typical Pedon for MLRA 95B

Typical pedon of Rodman gravelly loam, in an area of Casco-Rodman complex, 20 to 30 percent slopes, 500 feet south and 2,600 feet east of the northwest corner of sec. 7, T. 44 N., R. 9 E.

A—0 to 11 inches; very dark gray (10YR 3/1) gravelly loam, dark grayish brown (10YR 4/2) dry; strong fine and medium granular structure; friable; many very fine and fine roots; 17 percent gravel; neutral; clear wavy boundary.

Bw—11 to 14 inches; 50 percent dark brown (10YR 3/3) and 50 percent brown (10YR 4/3) gravelly loam; weak fine granular structure; friable; common very fine roots; common distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; 25 percent gravel; strongly effervescent; slightly alkaline; abrupt wavy boundary.

C—14 to 60 inches; dark yellowish brown (10YR 4/4) very gravelly sand and very gravelly loamy sand; single grain; loose; common very fine roots; 50 percent gravel; strongly effervescent; moderately alkaline.

MLRA Series Range in Characteristics

Thickness of the mollic epipedon: 4 to 12 inches
Depth to carbonates: 10 to 15 inches
Thickness of the solum: 10 to 15 inches

A or Ap horizon:
Hue—7.5YR or 10YR
Value—2 or 3
Chroma—1 or 2
Texture—loam, sandy loam, or the gravelly analogs of these textures
Content of gravel—10 to 35 percent

Bw horizon:
Hue—7.5YR or 10YR
Value—3 to 5
Chroma—3 or 4
Texture—gravelly loam or gravelly sandy loam
Content of gravel—15 to 35 percent

C horizon:
Hue—10YR
Value—4 or 5
Chroma—2 to 4
Texture—the very gravelly or extremely gravelly analogs of sand, loamy sand, coarse sand, or loamy coarse sand
Content of gravel—35 to 75 percent

969E2—Casco-Rodman complex, 12 to 20 percent slopes, eroded

Setting

Landform: Stream terraces, kames, outwash plains, and moraines
Position on the landform: Backslopes
Slope range: 12 to 20 percent

Typical soil series descriptions with range in characteristics are included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Casco and similar soils: 50 percent
Rodman and similar soils: 40 percent
Dissimilar soils: 10 percent

Similar soils:
- soils that are slightly eroded
- soils that contain sandy and gravelly deposits at a depth of more than 20 inches
- soils that contain carbonates at or near the surface
- soils that have slopes of less than 12 percent or more than 20 percent
- soils that contain loamy till in the lower part of the profile

Dissimilar soils:
- the somewhat poorly drained Kane soils in the lower positions on the landform

• the poorly drained Will soils in depressions and drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

969F—Casco-Rodman complex, 20 to 30 percent slopes

Setting

Landform: Stream terraces, kames, outwash plains, and moraines
Position on the landform: Backslopes
Slope range: 20 to 30 percent

Typical soil series descriptions with range in characteristics are included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Casco and similar soils: 50 percent
Rodman and similar soils: 40 percent
Dissimilar soils: 10 percent

Similar soils:
- soils that contain carbonates at or near the surface
- soils that contain sandy and gravelly deposits at a depth of more than 20 inches
- soils that have slopes of less than 20 percent or more than 30 percent
- soils that are moderately eroded
- soils that contain loamy till in the lower part of the profile

Dissimilar soils:
- the somewhat poorly drained Kane soils in the lower positions on the landform
- the poorly drained Will soils in depressions

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Rush Series

Drainage class: Well drained
Permeability: Moderate in the upper part and very rapid in the lower part
Landform: Outwash plains, stream terraces, and kames
Parent material: Silty material and the underlying loamy and gravelly outwash
Slope range: 0 to 6 percent
Taxonomic classification: Fine-silty, mixed, mesic Typic Hapludalfs

Typical Pedon for MLRA 95B

Typical pedon of Rush silt loam, 0 to 2 percent slopes, 175 feet south and 470 feet west of the northeast corner of sec. 15, T. 39 N., R. 8 E.

A—0 to 4 inches; very dark gray (10YR 3/1) silt loam, brown (10YR 5/3) dry; weak very fine granular structure; very friable; common very fine roots; slightly acid; abrupt smooth boundary.

E—4 to 11 inches; 60 percent dark grayish brown (10YR 4/2) and 40 percent brown (10YR 4/3) silt loam; weak thick platy structure; friable; common very fine roots; strongly acid; abrupt smooth boundary.

Bt1—11 to 18 inches; 55 percent brown (10YR 4/3) and 45 percent dark yellowish brown (10YR 4/4) silty clay loam; weak very fine subangular blocky structure; friable; common very fine roots; strongly acid; clear smooth boundary.

Bt2—18 to 24 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate fine subangular blocky structure; firm; common very fine roots; common distinct brown (10YR 4/3) clay films on faces of peds; moderately acid; clear smooth boundary.

Bt3—24 to 32 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium subangular blocky structure; firm; few very fine roots; common distinct brown (10YR 4/3) clay films on faces of peds; slightly acid; clear smooth boundary.

Bt4—32 to 38 inches; dark yellowish brown (10YR 4/4) silty clay loam; weak coarse subangular blocky structure; firm; few very fine roots; few distinct brown (10YR 4/3) and dark brown (10YR 3/3) clay films on faces of peds; slightly acid; abrupt smooth boundary.

2Bt5—38 to 45 inches; dark yellowish brown (10YR

4/4) clay loam; weak coarse subangular blocky structure; firm; few very fine roots; common distinct dark brown (10YR 3/3) clay films on faces of peds; 12 percent gravel; slightly acid; abrupt smooth boundary.

3C—45 to 60 inches; yellowish brown (10YR 5/4) gravelly sand; single grain; loose; 25 percent gravel; strongly effervescent; moderately alkaline.

MLRA Series Range in Characteristics

Thickness of silty material: 24 to 40 inches
Depth to sandy and gravelly deposits: 40 to 60 inches
Depth to carbonates: 40 to 60 inches
Thickness of the solum: 40 to 70 inches

Ap or A horizon:
Hue—10YR
Value—3 or 4
Chroma—1 to 3
Texture—silt loam

E horizon (if it occurs):
Hue—10YR
Value—4 or 5
Chroma—2 to 4
Texture—silt loam

Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 to 6
Texture—silty clay loam or silt loam

2Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 to 6
Texture—clay loam, loam, sandy clay loam, sandy loam, or the gravelly analogs of these textures
Content of gravel—0 to 30 percent

3C horizon:
Hue—10YR
Value—5 or 6
Chroma—2 to 4
Texture—gravelly, very gravelly, or extremely gravelly analogs of sand, loamy sand, coarse sand, or loamy coarse sand
Content of gravel—20 to 70 percent

791A—Rush silt loam, 0 to 2 percent slopes

Setting

Landform: Outwash plains, stream terraces, and kames
Position on the landform: Summits
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Rush and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a seasonal high water table at a depth of less than 6 feet
- soils that have a darker subsurface layer
- soils that contain sandy and gravelly deposits at a depth of less than 40 inches or more than 60 inches
- soils that contain more sand in the upper and middle parts of the subsoil

Dissimilar soils:
- the poorly drained Dunham soils in depressions and drainageways
- the somewhat poorly drained Grundelein and Millstream soils in the lower positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

791B—Rush silt loam, 2 to 4 percent slopes

Setting

Landform: Outwash plains, stream terraces, and kames
Position on the landform: Summits, shoulders, and backslopes
Slope range: 2 to 4 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Rush and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a seasonal high water table at a depth of less than 6 feet
- soils that have a darker subsurface layer
- soils that contain sandy and gravelly deposits at a depth of less than 40 inches or more than 60 inches
- soils that contain more sand in the upper and middle parts of the subsoil

Dissimilar soils:
- the poorly drained Dunham soils in depressions and drainageways
- the somewhat poorly drained Grundelein and Millstream soils in the lower positions on the landform
- the loamy Fox soils in the higher positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

791C2—Rush silt loam, 4 to 6 percent slopes, eroded

Setting

Landform: Outwash plains, stream terraces, and kames
Position on the landform: Backslopes and shoulders
Slope range: 4 to 6 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Rush and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a darker subsurface layer
- soils that contain sandy and gravelly deposits at a depth of less than 40 inches or more than 60 inches
- soils that contain more sand in the upper and middle parts of the subsoil
- soils that have slopes of less than 4 percent or more than 6 percent

Dissimilar soils:
- the poorly drained Dunham soils in drainageways and depressions
- the somewhat poorly drained Grundelein and Millstream soils in the lower positions on the landform
- the loamy Fox soils in positions on the landform similar to those of the Rush soil

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Selmass Series

Drainage class: Poorly drained
Permeability: Moderate in the upper part and rapid in the lower part
Landform: Outwash plains and stream terraces
Parent material: Loamy outwash
Slope range: 0 to 2 percent
Taxonomic classification: Fine-loamy, mixed, mesic Typic Endoaquolls

Typical Pedon for MLRA 95B

Typical pedon of Selmass loam, 0 to 2 percent slopes, 50 feet north and 600 feet east of the southwest corner of sec. 23, T. 44 N., R. 6 E.

Ap—0 to 4 inches; black (N 2.5/0) loam, dark gray (10YR 4/1) dry; weak medium subangular blocky structure parting to weak medium granular; friable; common very fine roots; neutral; abrupt smooth boundary.

A—4 to 11 inches; black (10YR 2/1) loam, dark gray (10YR 4/1) dry; weak fine and medium subangular blocky structure; friable; common very fine roots; common distinct black (N 2.5/0) organic coatings on faces of peds and in pores; neutral; clear smooth boundary.

AB—11 to 15 inches; 65 percent black (10YR 2/1) and

35 percent very dark grayish brown (2.5Y 3/2) loam, dark grayish brown (10YR 4/2) dry; weak fine and medium subangular blocky structure; friable; common very fine roots; neutral; clear smooth boundary.

Btg1—15 to 20 inches; dark grayish brown (2.5Y 4/2) loam; weak medium prismatic structure parting to moderate medium subangular blocky; friable; common very fine roots; few distinct dark gray (2.5Y 4/1) clay films and black (10YR 2/1) organic coatings on faces of peds and in pores; common fine distinct olive brown (2.5Y 4/4) masses of iron accumulation in the matrix; common fine and medium faint grayish brown (2.5Y 5/2) iron depletions in the matrix; 1 percent gravel; neutral; gradual smooth boundary.

Btg2—20 to 30 inches; grayish brown (2.5Y 5/2) clay loam; moderate medium subangular blocky structure; friable; common very fine roots; few distinct dark gray (2.5Y 4/1) and grayish brown (2.5Y 4/2) clay films on faces of peds and in pores; common fine strong brown (7.5YR 4/6) very weakly cemented iron oxide concretions throughout; common fine and medium distinct light olive brown (2.5Y 5/4) masses of iron accumulation in the matrix; 2 percent gravel; neutral; gradual smooth boundary.

Btg3—30 to 42 inches; light olive gray (5Y 6/2) clay loam; weak medium and coarse subangular blocky structure; friable; few very fine roots; few distinct olive gray (5Y 5/2) clay films on faces of peds and in pores; very dark gray (10YR 3/1) krotovina; common fine strong brown (7.5YR 4/6) very weakly cemented iron oxide concretions throughout; common fine and medium prominent light olive brown (2.5Y 5/4) masses of iron accumulation in the matrix; 2 percent gravel; neutral; clear smooth boundary.

2BCg—42 to 47 inches; grayish brown (2.5Y 5/2) sandy loam; weak medium subangular blocky structure; very friable; few very fine roots; common medium and coarse distinct light olive brown (2.5Y 5/4) masses of iron accumulation in the matrix; 4 percent gravel; neutral; clear wavy boundary.

2Cg—47 to 60 inches; grayish brown (2.5Y 5/2) loamy sand; massive; very friable; common medium and coarse prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; 4 percent gravel; neutral.

MLRA Series Range in Characteristics

Thickness of the mollic epipedon: 10 to 20 inches
Depth to sandy outwash: 35 to 55 inches
Depth to carbonates: Greater than 35 inches
Thickness of the solum: 35 to 55 inches

Ap or A horizon:
Hue—10YR, 2.5Y, or N
Value—2 or 3
Chroma—0 to 2
Texture—clay loam, loam, or silt loam

Btg horizon:
Hue—10YR, 2.5Y, 5Y, or N
Value—4 to 6
Chroma—0 to 2
Texture—loam, clay loam, sandy clay loam, sandy loam, silty clay loam, or silt loam

2Cg or 2C horizon:
Hue—10YR, 2.5Y, or 5Y
Value—5 or 6
Chroma—1 to 4
Texture—sand or loamy sand

529A—Selmass loam, 0 to 2 percent slopes

Setting

Landform: Outwash plains and stream terraces
Position on the landform: Footslopes and toeslopes
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Selmass and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that contain less sand and more silt in the upper and middle parts of the profile
- soils that contain sandy outwash at a depth of less than 35 inches
- soils that have a thinner subsurface layer
- soils that contain less clay in the subsoil

Dissimilar soils:
- the well drained Dakota and somewhat poorly drained Lahoguess soils in the higher positions on the landform
- the calcareous Hooppole soils in positions on the landform similar to those of the Selmass soil
- the very poorly drained Houghton and Palms soils in depressions

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

1529A—Selmass loam, 0 to 2 percent slopes, undrained

Setting

Landform: Outwash plains and stream terraces
Position on the landform: Toeslopes
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Selmass and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that contain less sand and more silt in the upper and middle parts of the profile
- soils that contain sandy outwash at a depth of less than 35 inches
- soils that have a thinner subsurface layer
- soils that contain less clay in the subsoil

Dissimilar soils:
- the well drained Dakota and somewhat poorly drained Lahoguess soils in the higher positions on the landform
- the calcareous Hooppole soils in positions on the landform similar to those of the Selmass soil
- the very poorly drained Houghton and Palms soils in depressions

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Senachwine Series

Drainage class: Well drained
Permeability: Moderate in the upper part and moderately slow in the lower part
Landform: Moraines
Parent material: Thin mantle of silty material and the underlying loamy till
Slope range: 12 to 30 percent
Taxonomic classification: Fine-loamy, mixed, mesic Typic Hapludalfs

Typical Pedon for MLRA 95B

Typical pedon of Senachwine silt loam, 12 to 20 percent slopes, 1,620 feet south and 1,620 feet west of the northeast corner of sec. 7, T. 43 N., R. 6 E.

A—0 to 4 inches; very dark gray (10YR 3/1) silt loam, dark grayish brown (4/2) dry; strong very fine and fine granular structure; friable; common very fine and fine roots; 1 percent gravel; neutral; abrupt smooth boundary.

E—4 to 9 inches; brown (10YR 5/3) loam, very pale brown (10YR 7/3) dry; moderate thin platy structure; friable; common very fine and fine roots; many prominent light gray (10YR 7/2 dry) clay depletions on faces of peds; few distinct very dark gray (10YR 3/1) organic coatings on faces of peds; 1 percent gravel; neutral; clear smooth boundary.

BE—9 to 14 inches; brown (7.5YR 4/4) loam; moderate fine and medium subangular blocky structure; friable; common very fine and fine roots; common prominent light gray (10YR 7/2 dry) clay depletions on faces of peds; 1 percent gravel; moderately acid; clear smooth boundary.

Bt1—14 to 19 inches; brown (7.5YR 4/4) clay loam; moderate medium prismatic structure parting to strong fine and medium subangular blocky; firm; common very fine and fine roots; many distinct brown (7.5YR 4/3) clay films on faces of peds; few prominent light gray (10YR 7/2 dry) clay depletions on faces of peds; very few distinct dark brown (7.5YR 3/2) organo-clay films in root channels and in pores; 2 percent gravel; strongly acid; clear smooth boundary.

Bt2—19 to 31 inches; brown (7.5YR 4/4) clay loam; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; common very fine and fine roots; common distinct brown (7.5YR 4/3) clay films on faces of peds; very few distinct dark brown (7.5YR 3/2) organo-clay films in root channels and in pores; 2 percent gravel; moderately acid; clear smooth boundary.

Bt3—31 to 40 inches; 70 percent brown (7.5YR 4/4) and 30 percent brown (7.5YR 5/4) loam; weak medium prismatic structure parting to weak medium subangular blocky; firm; common very fine roots; very few distinct brown (7.5YR 4/3) clay films on faces of peds and in pores; very few distinct dark brown (7.5YR 3/2) organo-clay films in root channels and in pores; common fine and medium very dark gray (10YR 3/1) wormcasts; 5 percent gravel; slightly effervescent; slightly alkaline; gradual smooth boundary.

C—40 to 60 inches; brown (7.5YR 5/4) loam; massive; firm; common very fine roots; 5 percent gravel; strongly effervescent; moderately alkaline.

MLRA Series Range in Characteristics

Thickness of silty material: Less than 18 inches
Depth to carbonates: 20 to 40 inches
Thickness of the solum: 24 to 40 inches

Ap or A horizon:
Hue—10YR
Value—3 or 4 (4 to 6 dry)
Chroma—1 to 3
Texture—silt loam, loam, sandy loam, or fine sandy loam

E horizon (if it occurs):
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—2 to 4
Texture—silt loam, loam, sandy loam, or fine sandy loam

Bt horizon:
Hue—5YR, 7.5YR, or 10YR
Value—4 to 6
Chroma—3 to 6
Texture—clay loam or loam

C horizon:
Hue—5YR, 7.5YR, or 10YR
Value—5 or 6
Chroma—3 or 4
Texture—loam or sandy loam
Content of gravel—less than 15 percent

618E—Senachwine silt loam, 12 to 20 percent slopes

Setting

Landform: Moraines
Position on the landform: Backslopes
Slope range: 12 to 20 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Senachwine and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that are moderately eroded
- soils that have a darker subsurface layer
- soils that contain carbonates at a depth of less than 20 inches or more than 40 inches
- soils that have slopes of less than 12 percent or more than 20 percent

Dissimilar soils:
- the somewhat poorly drained Herbert soils in the lower positions on the landform
- Fox soils, which contain sandy and gravelly deposits at a depth of less than 40 inches; in the lower positions on the landform
- the poorly drained Pella soils in drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

618F—Senachwine silt loam, 20 to 30 percent slopes

Setting

Landform: Moraines
Position on the landform: Backslopes
Slope range: 20 to 30 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Senachwine and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that are moderately eroded
- soils that have a darker subsurface layer
- soils that contain carbonates at a depth of less than 20 inches or more than 40 inches
- soils that have slopes of less than 20 percent or more than 30 percent

Dissimilar soils:
- the poorly drained Pella soils in drainageways
- Fox soils, which contain sandy and gravelly deposits at a depth of less than 40 inches; in the lower positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Thorp Series

Drainage class: Poorly drained
Permeability: Slow
Landform: Outwash plains, stream terraces, and till plains
Parent material: Silty material and the underlying loamy outwash
Slope range: 0 to 2 percent
Taxonomic classification: Fine-silty, mixed, mesic Argiaquic Argialbolls

Typical Pedon for MLRA 95B

Typical pedon of Thorp silt loam, 0 to 2 percent slopes, 2,500 feet south and 200 feet west of the northeast corner of sec. 18, T. 45 N., R. 5 E.

Ap—0 to 11 inches; 95 percent very dark grayish brown (10YR 3/2) and 5 percent grayish brown (10YR 5/2) silt loam, grayish brown (10YR 5/2) dry; weak medium subangular blocky structure parting to weak medium granular; friable; common very fine roots; common fine and medium black (N 2.5/0) very weakly cemented iron and manganese oxide concretions throughout; neutral; abrupt smooth boundary.

Eg—11 to 18 inches; grayish brown (10YR 5/2) silt loam, very pale brown (10YR 7/3) dry; weak fine and medium subangular blocky structure; friable; common very fine roots; very few distinct very dark grayish brown (10YR 3/2) organic coatings in root channels and in pores; few fine and medium black (N 2.5/0) iron and manganese oxide concretions throughout; common fine and medium prominent yellowish brown (10YR 5/6) and common medium faint pale brown (10YR 6/3) masses of iron accumulation in the matrix; moderately acid; clear smooth boundary.

BEg—18 to 22 inches; grayish brown (2.5Y 5/2) silt loam; weak fine subangular blocky structure; friable; common very fine roots; very few distinct dark grayish brown (2.5Y 4/2) coatings on faces of peds; few fine and medium black (N 2.5/0) very weakly cemented iron and manganese oxide concretions throughout; common fine and medium prominent yellowish brown (10YR 5/6) and common fine prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; many medium and coarse faint light brownish gray (2.5Y 6/2) iron depletions in the matrix; moderately acid; gradual smooth boundary.

Btg1—22 to 30 inches; light brownish gray (2.5Y 6/2) silty clay loam; moderate fine and medium subangular blocky structure; firm; common very fine roots; few distinct grayish brown (2.5Y 5/2) clay films on faces of peds; very few distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; common fine and medium black (N 2.5/0) very weakly cemented iron and manganese oxide concretions throughout; common fine and medium prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; slightly acid; clear smooth boundary.

Btg2—30 to 38 inches; gray (5Y 6/1) silty clay loam; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; common very fine roots; few distinct gray (5Y 5/1) clay films on faces of peds; few fine and medium black (N 2.5/0) very weakly cemented iron and manganese oxide concretions throughout; common medium prominent yellowish brown (10YR 5/6) and dark yellowish brown (10YR 4/6) masses of iron accumulation in the matrix; moderately acid; clear smooth boundary.

2Btg3—38 to 49 inches; gray (5Y 6/1) clay loam; weak medium prismatic structure parting to moderate medium subangular blocky; friable; common very fine roots; very few distinct gray (5Y 5/1) clay films on faces of peds; common fine and medium black (N 2.5/0) very weakly cemented iron and manganese oxide concretions throughout; common medium prominent yellowish brown (10YR 5/6) and dark yellowish brown (10YR 4/6)

masses of iron accumulation in the matrix; 3 percent gravel; moderately acid; gradual smooth boundary.

2BCg—49 to 60 inches; 50 percent dark yellowish brown (10YR 4/6), 40 percent gray (10YR 5/1), and 10 percent gray (10YR 6/1) sandy loam; weak medium prismatic structure parting to weak medium subangular blocky; friable; 2 percent gravel; neutral.

MLRA Series Range in Characteristics

Thickness of the mollic epipedon: 10 to 14 inches
Thickness of silty material: 30 to 54 inches
Depth to carbonates: Greater than 40 inches
Thickness of the solum: 40 to 65 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—silt loam

E horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—1 or 2
Texture—silt loam

Btg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 or 2
Texture—silty clay loam or silt loam

2Btg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 to 6
Texture—clay loam, loam, silt loam, sandy loam, or sandy clay loam

2BC horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 to 8
Texture—loam, silt loam, sandy loam, loamy sand, or sandy clay loam
Content of gravel—less than 15 percent

206A—Thorp silt loam, 0 to 2 percent slopes

Setting

Landform: Outwash plains, stream terraces, and till plains
Position on the landform: Depressions
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Thorp and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a thinner surface layer
- soils that have a darker subsurface layer
- soils that contain loamy till in the lower part of the subsoil

Dissimilar soils:
- the somewhat poorly drained Elburn and Virgil soils in the slightly higher positions on the landform
- soils that contain sandy and gravelly deposits at a depth of less than 40 inches

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

1206A—Thorp silt loam, 0 to 2 percent slopes, undrained

Setting

Landform: Outwash plains, stream terraces, and till plains
Position on the landform: Depressions
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Thorp and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a thinner surface layer
- soils that have a darker subsurface layer

• soils that contain loamy till in the lower part of the subsoil

Dissimilar soils:
• the somewhat poorly drained Elburn and Virgil soils in the slightly higher positions on the landform
• soils that contain sandy and gravelly deposits at a depth of less than 40 inches

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

• “Wildlife Habitat” section
• “Engineering” section
• “Soil Properties” section

Torox Series

Drainage class: Somewhat poorly drained
Permeability: Moderate
Landform: Moraines and till plains
Parent material: Silty material and the underlying loamy till
Slope range: 0 to 2 percent
Taxonomic classification: Fine-silty, mixed, mesic Aquic Hapludalfs

Typical Pedon for MLRA 95B

Typical pedon of Torox silt loam, 0 to 2 percent slopes, 2,620 feet south and 2,620 feet west of the northeast corner of sec. 6, T. 44 N., R. 5 E.

Ap—0 to 10 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; weak medium subangular blocky structure parting to weak medium granular; friable; common very fine roots; few prominent light gray (10YR 7/2) dry clay depletions on faces of peds and in pores; few fine black (10YR 2/1) very weakly cemented iron and manganese oxide concretions throughout; neutral; abrupt smooth boundary.

Bt1—10 to 13 inches; brown (10YR 4/3) silty clay loam; weak fine and medium subangular blocky structure; firm; common very fine roots; few distinct dark grayish brown (10YR 4/2) clay films on faces of peds and in pores; common fine black (10YR 2/1) very weakly cemented iron and manganese oxide concretions throughout; strongly acid; abrupt smooth boundary.

Bt2—13 to 18 inches; brown (10YR 4/3) silty clay loam; moderate fine and medium subangular blocky structure; firm; common very fine roots; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds and in pores; common fine black (10YR 2/1) very weakly cemented iron and manganese oxide concretions throughout; moderately acid; clear smooth boundary.

Bt3—18 to 25 inches; brown (10YR 5/3) silty clay loam; weak medium prismatic structure parting to moderate medium subangular blocky; firm; common very fine roots; few distinct dark grayish brown (10YR 4/2) clay films on faces of peds and in pores; common fine black (10YR 2/1) very weakly cemented iron and manganese oxide concretions throughout; common fine and medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common fine and medium faint grayish brown (10YR 5/2) iron depletions in the matrix; moderately acid; clear wavy boundary.

2Bt4—25 to 28 inches; brown (10YR 5/3) clay loam; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; few very fine roots; few distinct dark grayish brown (10YR 4/2) clay films on faces of peds and in pores; common fine black (10YR 2/1) very weakly cemented iron and manganese oxide concretions throughout; common fine and medium prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; many fine and medium faint grayish brown (10YR 5/2) iron depletions in the matrix; 2 percent gravel; slightly acid; clear wavy boundary.

2Bt5—28 to 42 inches; strong brown (7.5YR 4/6) clay loam; weak medium and coarse subangular blocky structure; firm; few very fine roots; few distinct brown (7.5YR 4/2) clay films on faces of peds and in pores; few distinct dark brown (7.5YR 3/2) organo-clay films in root channels and in pores; common fine black (10YR 2/1) very weakly cemented iron and manganese oxide concretions throughout; many medium and coarse faint strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; common fine and medium distinct brown (7.5YR 5/2) iron depletions in the matrix; 3 percent gravel; neutral; clear wavy boundary.

2C1—42 to 51 inches; brown (7.5YR 5/3) loam; massive; firm; few distinct dark brown (7.5YR 3/2) linings in root channels and in pores; common fine black (10YR 2/1) very weakly cemented iron and manganese oxide concretions throughout; many medium and coarse distinct strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; common fine and medium faint pinkish gray (7.5YR 6/2) iron depletions in the matrix; 3 percent gravel; slightly effervescent; slightly alkaline; clear wavy boundary.

2C2—51 to 65 inches; brown (7.5YR 5/3) loam; massive; friable; very few distinct dark brown (7.5YR 3/2) linings in root channels and in pores; common medium and coarse distinct strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; common fine and medium faint pinkish gray (7.5YR 6/2) iron depletions in the matrix; 5 percent gravel; strongly effervescent; moderately alkaline.

MLRA Series Range in Characteristics

Thickness of silty material: 22 to 40 inches
Depth to carbonates: 36 to 60 inches
Thickness of the solum: 36 to 60 inches

Ap or A horizon:
Hue—10YR
Value—3 or 4 (6 or 7 dry)
Chroma—2 or 3
Texture—silt loam

Bt horizon:
Hue—10YR
Value—4 to 6
Chroma—2 to 4
Texture—silty clay loam or silt loam

2Bt horizon:
Hue—7.5YR, 10YR, or 2.5Y
Value—4 to 6
Chroma—2 to 6
Texture—clay loam, loam, or sandy clay loam

2C horizon:
Hue—7.5YR, 10YR, or 2.5Y
Value—4 to 6
Chroma—2 to 6
Texture—loam or sandy loam
Content of gravel—3 to 15 percent

544A—Torox silt loam, 0 to 2 percent slopes

Setting

Landform: Moraines and till plains
Position on the landform: Footslopes
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the "Soil Properties" section in Part II of this publication.

Composition

Torox and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a darker surface layer
- soils that have a seasonal high water table at a depth of more than 2.5 feet
- soils that contain carbonates at a depth of less than 36 inches
- soils that contain more sand in the upper one-half of the subsoil

Dissimilar soils:
- the well drained Caprell and Piscasaw soils and the moderately well drained Windere soils in the higher positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- "Agronomy" section
- "Forestland" section
- "Wildlife Habitat" section
- "Engineering" section
- "Soil Properties" section

Troxel Series

Drainage class: Well drained
Permeability: Moderate
Landform: Outwash plains and till plains
Parent material: Silty colluvium and the underlying drift
Slope range: 0 to 2 percent
Taxonomic classification: Fine-silty, mixed, mesic Pachic Argiudolls

Typical Pedon for MLRA 95B

Typical pedon of Troxel silt loam, 0 to 2 percent slopes, 165 feet south and 2,100 feet west of the northeast corner of sec. 14, T. 44 N., R. 6 E.

Ap—0 to 8 inches; black (10YR 2/1) silt loam, dark grayish brown (10YR 4/2) dry; weak very fine granular structure; friable; many very fine roots; slightly acid; abrupt smooth boundary.
A1—8 to 14 inches; black (10YR 2/1) silt loam, dark grayish brown (10YR 4/2) dry; moderate fine granular structure; friable; many very fine roots; slightly acid; abrupt smooth boundary.
A2—14 to 27 inches; black (N 2.5/0) silt loam, dark grayish brown (10YR 4/2) dry; moderate fine

granular structure; friable; common very fine roots; moderately acid; clear smooth boundary.

A3—27 to 33 inches; very dark brown (10YR 2/2) silt loam, grayish brown (10YR 5/2) dry; moderate very fine granular structure; friable; common very fine roots; moderately acid; clear smooth boundary.

BA—33 to 39 inches; brown (10YR 4/3) silt loam; moderate very fine subangular blocky structure; friable; common distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; common very fine roots; moderately acid; clear smooth boundary.

Bt1—39 to 55 inches; brown (10YR 4/3) silty clay loam; moderate fine and medium subangular blocky structure; firm; common distinct dark brown (10YR 3/3) clay films on faces of peds; few very fine roots; common sand grains; moderately acid; clear smooth boundary.

2Bt2—55 to 60 inches; 60 percent brown (10YR 4/3) and 40 percent dark yellowish brown (10YR 4/4) clay loam; moderate medium subangular blocky structure; firm; common distinct dark brown (10YR 3/3) clay films on faces of peds; few very fine roots; 5 percent gravel; moderately acid; clear smooth boundary.

2Bt3—60 to 67 inches; brown (10YR 4/3) gravelly sandy loam; weak medium subangular blocky structure; friable; common distinct dark brown (10YR 3/3) clay films on faces of peds; 17 percent gravel; slightly acid; clear smooth boundary.

2Bt4—67 to 75 inches; dark yellowish brown (10YR 4/4) sandy loam; weak coarse subangular blocky structure; very friable; few distinct brown (10YR 4/3) clay films on faces of peds and in pores; 8 percent gravel; slightly acid; abrupt smooth boundary.

2Bt5—75 to 79 inches; 55 percent dark yellowish brown (10YR 4/4) and 45 percent brown (10YR 4/3) clay loam; weak medium angular blocky structure; firm; few distinct dark brown (10YR 3/3) clay films on faces of peds and in pores; 10 percent gravel; slightly acid; abrupt smooth boundary.

2BC—79 to 102 inches; 55 percent dark brown (7.5YR 3/2) and 45 percent brown (7.5YR 4/2) gravelly sandy clay loam; weak coarse angular blocky structure; friable; 18 percent gravel; slightly alkaline.

MLRA Series Range in Characteristics

Thickness of the mollic epipedon: 20 to 45 inches
Thickness of silty material: 36 to 60 inches
Thickness of the solum: Greater than 60 inches

Ap or A horizon:
Hue—10YR, 2.5Y, or N
Value—2 or 3
Chroma—0 to 3
Texture—silt loam

Bt horizon:
Hue—10YR
Value—3 to 5
Chroma—3 to 6
Texture—silt loam or silty clay loam

2Bt or 2BC horizon:
Hue—7.5YR or 10YR
Value—3 to 5
Chroma—2 to 6
Texture—loam, clay loam, sandy clay loam, sandy loam, or the gravelly analogs of these textures
Content of gravel—0 to 20 percent

197A—Troxel silt loam, 0 to 2 percent slopes

Setting

Landform: Outwash plains and till plains
Position on the landform: Depressions
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the "Soil Properties" section in Part II of this publication.

Composition

Troxel and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a seasonal high water table at a depth of less than 6 feet
- soils that have a thinner subsurface layer
- soils that contain loamy drift at a depth of more than 60 inches
- soils that contain less clay in the subsoil

Dissimilar soils:
- the loamy Dakota and Dickinson soils in the higher positions on the landform
- the poorly drained Pella and Thorp soils in the lower positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Varna Series

Drainage class: Moderately well drained
Permeability: Moderately slow in the upper part and slow in the lower part
Landform: Moraines and till plains
Parent material: Thin mantle of silty material and the underlying silty clay loam till
Slope range: 2 to 12 percent
Taxonomic classification: Fine, illitic, mesic Oxyaquic Argiudolls
Taxadjunct features: Varna silt loam, 4 to 6 percent slopes, eroded, and Varna silt loam, 6 to 12 percent slopes, eroded, have a mollic epipedon that is less than 10 inches thick. These soils are classified as fine, illitic, mesic Oxyaquic Hapludalfs.

Typical Pedon for MLRA 95B

Typical pedon of Varna silt loam, 4 to 6 percent slopes, eroded, 285 feet south and 2,565 feet east of the northwest corner of sec. 19, T. 44 N., R. 7 E.

Ap1—0 to 4 inches; very dark grayish brown (10YR 3/2) silt loam, dark grayish brown (10YR 4/2) dry; moderate fine granular structure; friable; common very fine roots; few distinct black (10YR 2/1) organic coatings on faces of peds; slightly acid; abrupt smooth boundary.

Ap2—4 to 8 inches; 97 percent very dark grayish brown (10YR 3/2) and 3 percent brown (10YR 4/3) silty clay loam, dark grayish brown (10YR 4/2) dry; weak medium subangular blocky structure parting to weak medium granular; friable; common very fine roots; common distinct black (10YR 2/1) organic coatings on faces of peds; 1 percent gravel; moderately acid; abrupt smooth boundary.

BA—8 to 12 inches; brown (10YR 4/3) silty clay loam; weak fine and medium subangular blocky structure; friable; common very fine roots; few distinct very dark grayish brown (10YR 3/2) and very few distinct black (10YR 2/1) organic coatings on faces of peds and in pores; 1 percent gravel; neutral; clear smooth boundary.

2Bt1—12 to 20 inches; brown (10YR 4/3) silty clay loam; moderate fine and medium subangular blocky structure; friable; common very fine roots; common distinct dark brown (10YR 3/3) clay films on faces of peds; few distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds and in pores; 1 percent gravel; neutral; clear smooth boundary.

2Bt2—20 to 25 inches; olive brown (2.5Y 4/3) silty clay loam; moderate fine prismatic structure parting to moderate fine and medium subangular blocky; friable; common very fine roots; common distinct dark grayish brown (2.5Y 4/2) clay films on faces of peds; very few distinct very dark grayish brown (10YR 3/2) organic coatings in root channels and in pores; 1 percent gravel; neutral; clear smooth boundary.

2Bt3—25 to 31 inches; light olive brown (2.5Y 5/4) silty clay loam; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; common very fine roots; few distinct grayish brown (2.5Y 5/2) and very few distinct dark grayish brown (2.5Y 4/2) clay films on faces of peds; common fine prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common fine distinct light brownish gray (2.5Y 6/2) iron depletions in the matrix; 3 percent gravel; strongly effervescent; slightly alkaline; clear smooth boundary.

2BC—31 to 36 inches; light olive brown (2.5Y 5/4) silty clay loam; weak medium prismatic structure parting to weak medium subangular blocky; firm; common very fine roots; common fine and medium white (10YR 8/1) soft masses of carbonates; common fine yellowish brown (10YR 5/8) very weakly cemented iron oxide concretions throughout; few fine black (7.5YR 2/1) very weakly cemented iron and manganese oxide concretions throughout; many fine and medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; many fine and medium distinct light brownish gray (2.5Y 6/2) iron depletions in the matrix; 3 percent gravel; strongly effervescent; moderately alkaline; gradual smooth boundary.

2C—36 to 60 inches; light olive brown (2.5Y 5/4) silty clay loam; massive; very firm; common fine white (10YR 8/1) carbonate nodules; few fine yellowish brown (10YR 5/8) very weakly cemented iron oxide concretions throughout; common fine and medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; many medium distinct gray (2.5Y 6/1) iron depletions in the matrix; 3 percent gravel; violently effervescent; moderately alkaline.

MLRA Series Range in Characteristics

Thickness of the mollic epipedon: 10 to 16 inches
Thickness of silty material: Less than 18 inches

Depth to carbonates: 24 to 42 inches
Thickness of the solum: 24 to 50 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—silt loam or silty clay loam

2Bt horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 4
Texture—silty clay loam or silty clay

2C horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 6
Texture—silty clay loam, silty clay, or clay loam

223B—Varna silt loam, 2 to 4 percent slopes

Setting

Landform: Moraines and till plains
Position on the landform: Summits, shoulders, and backslopes
Slope range: 2 to 4 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Varna and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that are moderately eroded
- soils that contain less clay in the subsoil
- soils that contain more sand in the upper part of the profile
- soils that have a seasonal high water table at a depth of more than 3.5 feet or less than 2 feet

Dissimilar soils:
- the poorly drained Ashkum and very poorly drained Peotone soils in depressions and drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

223C2—Varna silt loam, 4 to 6 percent slopes, eroded

Setting

Landform: Moraines and till plains
Position on the landform: Summits, shoulders, and backslopes
Slope range: 4 to 6 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Varna and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a lighter colored surface layer
- soils that contain less clay in the subsoil
- soils that contain more sand in the upper part of the profile
- soils that have a seasonal high water table at a depth of more than 3.5 feet or less than 2 feet

Dissimilar soils:
- the poorly drained Ashkum and very poorly drained Peotone soils in depressions and drainageways
- calcareous soils in positions on the landform similar to those of the Varna soil

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

223D2—Varna silt loam, 6 to 12 percent slopes, eroded

Setting

Landform: Moraines and till plains
Position on the landform: Backslopes

Slope range: 6 to 12 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Varna and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that are severely eroded
- soils that have a seasonal high water table at a depth of more than 3.5 feet
- soils that contain less clay in the subsoil
- soils that contain more sand in the upper part of the profile

Dissimilar soils:
- the poorly drained Ashkum and very poorly drained Peotone soils in depressions and drainageways
- calcareous soils in positions on the landform similar to those of the Varna soil

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Virgil Series

Drainage class: Somewhat poorly drained
Permeability: Moderate
Landform: Moraines, till plains, and outwash plains
Parent material: Silty material and the underlying loamy outwash
Slope range: 0 to 2 percent
Taxonomic classification: Fine-silty, mixed, mesic Udollic Endoaqualfs

Typical Pedon for MLRA 95B

Typical pedon of Virgil silt loam, 0 to 2 percent slopes, 300 feet south and 1,346 feet east of the northwest corner of sec. 8, T. 26 N., R. 8 E.

Ap—0 to 7 inches; black (10YR 2/1) silt loam, grayish brown (10YR 5/2) dry; weak medium granular structure; friable; common fine roots; neutral; abrupt smooth boundary.

E—7 to 13 inches; 70 percent dark grayish brown (10YR 4/2) and 30 percent grayish brown (10YR 5/2) silt loam; weak thin platy structure parting to moderate fine granular; friable; many fine roots; few faint black (10YR 2/1) organic coatings on faces of peds and in root channels; few fine prominent brown (7.5YR 4/4) masses of iron accumulation in the matrix; strongly acid; clear smooth boundary.

Bt1—13 to 17 inches; 55 percent grayish brown (10YR 5/2) and 45 percent brown (10YR 5/3) silty clay loam; moderate fine subangular blocky structure; firm; common fine roots; few faint dark grayish brown (10YR 4/2) clay films on faces of peds; common distinct light gray (10YR 7/2 dry) clay depletions on faces of peds; few fine black (10YR 2/1) very weakly cemented iron and manganese oxide concretions throughout; few fine prominent brown (7.5YR 4/4) and strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; strongly acid; clear smooth boundary.

Bt2—17 to 25 inches; 55 percent grayish brown (10YR 5/2) and 45 percent brown (10YR 5/3) silty clay loam; moderate fine subangular blocky structure; firm; common fine roots; common faint dark grayish brown (10YR 4/2) and grayish brown (10YR 5/2) clay films on faces of peds; common faint light gray (10YR 7/2 dry) clay depletions on faces of peds; few fine black (10YR 2/1) iron and manganese oxide concretions throughout; few fine prominent brown (7.5YR 4/4) and strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; strongly acid; gradual smooth boundary.

Btg1—25 to 35 inches; light brownish gray (2.5Y 6/2) silty clay loam; moderate fine and medium subangular blocky structure; firm; few fine roots; many faint grayish brown (2.5Y 5/2) clay films on faces of peds; few distinct light gray (10YR 7/2 dry) clay depletions on faces of peds; many fine black (10YR 2/1) iron and manganese oxide concretions throughout; common fine prominent strong brown (7.5YR 5/6 and 5/8) masses of iron accumulation in the matrix; strongly acid; clear smooth boundary.

Btg2—35 to 44 inches; light brownish gray (2.5Y 6/2) silty clay loam; moderate medium and coarse subangular and angular blocky structure; firm; few fine roots; common faint grayish brown (2.5Y 5/2) clay films on faces of peds; few distinct light gray (10YR 7/2 dry) clay depletions on faces of peds; many fine black (10YR 2/1) iron and manganese

oxide nodules and concretions throughout; many medium prominent brown (7.5YR 4/4) and strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; moderately acid; clear smooth boundary.

Btg3—44 to 49 inches; grayish brown (2.5Y 5/2) silty clay loam; weak medium and coarse angular blocky structure; firm; few fine roots; few prominent gray (N 5/0) clay films on faces of peds; many fine black (10YR 2/1) iron and manganese oxide nodules and concretions throughout; many medium prominent brown (7.5YR 4/4) and strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; moderately acid; clear smooth boundary.

2Btg4—49 to 58 inches; 55 percent grayish brown (2.5Y 5/2) and 45 percent light brownish gray (2.5Y 6/2) loam; weak coarse angular blocky structure; firm; few prominent dark gray (N 4/0) clay films on faces of peds; few fine black (10YR 2/1) iron and manganese oxide concretions throughout; many medium prominent brown (7.5YR 4/4) and strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; neutral; gradual smooth boundary.

2C—58 to 60 inches; 55 percent brown (10YR 4/3) and 45 percent dark yellowish brown (10YR 4/4) sandy loam; massive; friable; common fine distinct dark gray (10YR 4/1) and gray (10YR 5/1) iron depletions in the matrix; slightly alkaline.

MLRA Series Range in Characteristics

Thickness of silty material: 40 to 60 inches
Depth to carbonates: 45 to 70 inches
Thickness of the solum: 42 to 70 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—silt loam

E horizon:
Hue—10YR
Value—4 to 6
Chroma—1 or 2
Texture—silt loam

Bt or Btg horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 4
Texture—silty clay loam

2Bt or 2Btg horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 6
Texture—loam, clay loam, sandy loam, or silt loam

2C or 2Cg horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 6
Texture—loam, sandy loam, or silt loam

104A—Virgil silt loam, 0 to 2 percent slopes

Setting

Landform: Moraines, till plains, and outwash plains
Position on the landform: Footslopes
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Virgil and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a lighter colored surface layer
- soils that have a thicker surface layer
- soils that contain more sand in the middle part of the subsoil

Dissimilar soils:
- the poorly drained Pella soils in drainageways
- the well drained McHenry and Ringwood soils in the higher positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Forestland” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Warsaw Series

Drainage class: Well drained
Permeability: Moderate in the upper part and very rapid in the lower part
Landform: Outwash plains, stream terraces, and kames

Parent material: Loamy drift over sandy and gravelly deposits
Slope range: 0 to 6 percent
Taxonomic classification: Fine-loamy over sandy or sandy-skeletal, mixed, mesic Typic Argiudolls
Taxadjunct features: Warsaw loam, 4 to 6 percent slopes, eroded, has a mollic epipedon that is less than 10 inches thick. This soil is classified as a fine-loamy over sandy or sandy-skeletal, mixed, mesic Mollic Hapludalf.

Typical Pedon for MLRA 95B

Typical pedon of Warsaw loam, 0 to 2 percent slopes, 2,094 feet south and 2,565 feet east of the northwest corner of sec. 8, T. 43 N., R. 7 E.

Ap—0 to 6 inches; very dark brown (10YR 2/2) loam, dark grayish brown (10YR 4/2) dry; weak fine and medium subangular blocky structure; friable; common very fine roots; few distinct black (10YR 2/1) organic coatings on faces of peds; 1 percent gravel; neutral; clear smooth boundary.
A—6 to 11 inches; very dark brown (10YR 2/2) loam, dark grayish brown (10YR 4/2) dry; weak medium subangular blocky structure parting to weak medium granular; friable; common very fine roots; few distinct black (10YR 2/1) organic coatings on faces of peds; 1 percent gravel; neutral; clear smooth boundary.
BA—11 to 15 inches; dark brown (10YR 3/3) loam, brown (10YR 5/3) dry; weak fine and medium subangular blocky structure; friable; common very fine roots; few distinct very dark brown (10YR 2/2) and black (10YR 2/1) organic coatings on faces of peds; 1 percent gravel; slightly acid; clear smooth boundary.
Bt1—15 to 19 inches; brown (10YR 4/3) clay loam; moderate fine and medium subangular blocky structure; friable; common very fine roots; few distinct dark brown (10YR 3/3) clay films on faces of peds; common distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds and in pores; 1 percent gravel; moderately acid; clear smooth boundary.
Bt2—19 to 31 inches; brown (7.5YR 4/4) clay loam; moderate medium subangular blocky structure; friable; common very fine roots; common distinct brown (10YR 4/3) clay films and few distinct dark brown (10YR 3/3) clay films on faces of peds; 3 percent gravel; slightly acid; abrupt wavy boundary.
2C—31 to 60 inches; yellowish brown (10YR 5/4) very gravelly loamy coarse sand and very gravelly coarse sand; single grain; loose; violently effervescent; 38 percent gravel; moderately alkaline.

MLRA Series Range in Characteristics

Thickness of the mollic epipedon: 10 to 18 inches
Depth to sandy and gravelly deposits: 24 to 40 inches
Depth to carbonates: 24 to 40 inches
Thickness of the solum: 24 to 40 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—silt loam or loam

Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 or 4
Texture—clay loam, loam, sandy clay loam, silty clay loam, or the gravelly analogs of these textures
Content of gravel—0 to 35 percent

2C horizon:
Hue—7.5YR or 10YR
Value—5 or 6
Chroma—2 to 4
Texture—the gravelly, very gravelly, or extremely gravelly analogs of sand, loamy sand, coarse sand, or loamy coarse sand
Content of gravel—20 to 70 percent

290A—Warsaw loam, 0 to 2 percent slopes

Setting

Landform: Outwash plains, stream terraces, and kames
Position on the landform: Summits
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Warsaw and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that contain loamy till in the lower part of the profile

- soils that have a thinner subsurface layer and are lighter colored in the upper part of the subsoil
- soils that contain sandy and gravelly deposits at a depth of more than 40 inches or less than 24 inches
- soils that contain less sand and more silt in the upper one-half of the profile
- soils that have a seasonal high water table at a depth of less than 6 feet
- soils that contain carbonates at a depth of less than 24 inches or more than 40 inches

Dissimilar soils:
- the somewhat poorly drained Kane soils in the lower positions on the landform
- the poorly drained Will soils in depressions and drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

290B—Warsaw loam, 2 to 4 percent slopes

Setting

Landform: Outwash plains, stream terraces, and kames
Position on the landform: Summits, shoulders, and backslopes
Slope range: 2 to 4 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Warsaw and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that contain loamy till in the lower part of the profile
- soils that have a thinner subsurface layer and are lighter colored in the upper part of the subsoil
- soils that contain sandy and gravelly deposits at a depth of more than 40 inches or less than 24 inches
- soils that contain less sand and more silt in the upper one-half of the profile
- soils that have a seasonal high water table at a depth of less than 6 feet
- soils that contain carbonates at a depth of less than 24 inches or more than 40 inches

Dissimilar soils:
- the somewhat poorly drained Kane soils in the lower positions on the landform
- the poorly drained Will soils in depressions and drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

290C2—Warsaw loam, 4 to 6 percent slopes, eroded

Setting

Landform: Outwash plains, stream terraces, and kames
Position on the landform: Summits, shoulders, and backslopes
Slope range: 4 to 6 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Warsaw and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that contain loamy till in the lower part of the profile
- soils that have slopes of less than 4 percent
- soils that contain sandy and gravelly deposits at a depth of more than 40 inches or less than 24 inches
- soils that contain less sand and more silt in the upper one-half of the profile
- soils that contain carbonates at a depth of less than 24 inches or more than 40 inches

Dissimilar soils:
• the somewhat poorly drained Kane soils in the lower positions on the landform
• the poorly drained Will soils in depressions and drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- “Agronomy” section
- “Wildlife Habitat” section
- “Engineering” section
- “Soil Properties” section

Waupecan Series

Drainage class: Well drained
Permeability: Moderate in the upper part and very rapid in the lower part
Landform: Outwash plains, stream terraces, and kames
Parent material: Silty material and the underlying loamy and gravelly outwash
Slope range: 0 to 4 percent
Taxonomic classification: Fine-silty, mixed, mesic Typic Argiudolls

Typical Pedon for MLRA 95B

Typical pedon of Waupecan silt loam, 0 to 2 percent slopes, 225 feet south and 1,455 feet west of the northeast corner of sec. 21, T. 42 N., R. 6 E.

Ap—0 to 8 inches; very dark gray (10YR 3/1) silt loam, dark grayish brown (10YR 4/2) dry; moderate medium granular structure; friable; common very fine roots; neutral; abrupt smooth boundary.

A—8 to 13 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; moderate medium granular structure; friable; common very fine roots; slightly acid; clear smooth boundary.

BA—13 to 19 inches; brown (10YR 4/3) silt loam; weak very fine subangular blocky structure; firm; common very fine roots; common distinct very dark grayish brown (10YR 3/2) organic coatings in pores; slightly acid; clear smooth boundary.

Bt1—19 to 28 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium subangular blocky structure; firm; common very fine roots; common distinct brown (10YR 4/3) clay films on faces of peds; moderately acid; clear smooth boundary.

Bt2—28 to 38 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium and coarse subangular blocky structure; firm; few very fine roots; common distinct brown (10YR 4/3) clay films on faces of peds; moderately acid; abrupt smooth boundary.

2Bt3—38 to 44 inches; dark yellowish brown (10YR 4/4) clay loam; moderate medium and coarse subangular blocky structure; firm; few very fine roots; common distinct brown (7.5YR 4/3) clay films on faces of peds; 1 percent dolomitic pebbles; moderately acid; clear smooth boundary.

2Bt4—44 to 49 inches; brown (7.5YR 4/4) sandy clay loam; weak coarse subangular blocky structure; friable; few very fine roots; many distinct dark brown (7.5YR 3/4) clay films on faces of peds; 2 percent dolomitic pebbles; slightly acid; clear smooth boundary.

2Bt5—49 to 55 inches; brown (7.5YR 4/4) sandy loam; weak coarse subangular blocky structure; friable; many distinct dark brown (7.5YR 3/3) clay films on faces of peds; 8 percent dolomitic pebbles; neutral; abrupt smooth boundary.

3C—55 to 70 inches; brown (10YR 5/3) gravelly sand; single grain; loose; 32 percent dolomitic pebbles and cobblestones; strongly effervescent; moderately alkaline.

MLRA Series Range in Characteristics

Thickness of the mollic epipedon: 10 to 18 inches
Thickness of silty material: 24 to 48 inches
Depth to sandy and gravelly deposits: 40 to 60 inches
Depth to carbonates: 40 to 60 inches
Thickness of the solum: 40 to 65 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—silt loam

Bt horizon:
Hue—10YR
Value—4 or 5
Chroma—3 to 6
Texture—silty clay loam or silt loam

2Bt horizon:
Hue—7.5YR or 10YR
Value—3 to 5
Chroma—3 to 6
Texture—loam, clay loam, sandy clay loam, silt loam, sandy loam, or the gravelly analogs of these textures
Content of gravel—0 to 30 percent

3C horizon:
Hue—7.5YR or 10YR
Value—3 to 6
Chroma—3 to 6
Texture—the gravelly, very gravelly, or extremely gravelly analogs of sand, loamy sand, sandy loam, coarse sand, loamy coarse sand, or coarse sandy loam
Content of gravel—15 to 70 percent

369A—Waupecan silt loam, 0 to 2 percent slopes

Setting

Landform: Outwash plains, stream terraces, and kames
Position on the landform: Summits
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the "Soil Properties" section in Part II of this publication.

Composition

Waupecan and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that contain sandy and gravelly deposits at a depth of less than 40 inches or more than 60 inches
- soils that have a seasonal high water table at a depth of less than 6 feet
- soils that have no subsurface layer

Dissimilar soils:
- the somewhat poorly drained Grundelein and Millstream soils in the lower positions on the landform
- the poorly drained Dunham soils in depressions and drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- "Agronomy" section
- "Wildlife Habitat" section
- "Engineering" section
- "Soil Properties" section

369B—Waupecan silt loam, 2 to 4 percent slopes

Setting

Landform: Outwash plains, stream terraces, and kames
Position on the landform: Summits, shoulders, and backslopes
Slope range: 2 to 4 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the "Soil Properties" section in Part II of this publication.

Composition

Waupecan and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that contain sandy and gravelly deposits at a depth of less than 40 inches or more than 60 inches
- soils that have slopes of less than 2 percent
- soils that have no subsurface layer

Dissimilar soils:
- the somewhat poorly drained Grundelein and Millstream soils in the lower positions on the landform
- the poorly drained Dunham soils in depressions and drainageways

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- "Agronomy" section
- "Wildlife Habitat" section
- "Engineering" section
- "Soil Properties" section

Will Series

Drainage class: Poorly drained
Permeability: Moderate in the upper part and very rapid in the lower part
Landform: Outwash plains and stream terraces
Parent material: Loamy drift over sandy and gravelly deposits
Slope range: 0 to 2 percent
Taxonomic classification: Fine-loamy over sandy or sandy-skeletal, mixed, mesic Typic Endoaquolls

Typical Pedon for MLRA 95B

Typical pedon of Will loam, 0 to 2 percent slopes, 85 feet north and 2,020 feet west of the southeast corner of sec. 13, T. 43 N., R. 2 E.

Ap—0 to 8 inches; black (N 2.5/0) loam, very dark gray (10YR 3/1) dry; moderate very fine granular structure; friable; many fine roots; slightly acid; abrupt smooth boundary.

A—8 to 14 inches; black (N 2.5/0) loam, very dark gray (10YR 3/1) dry; moderate very fine and fine subangular blocky structure; friable; many fine roots; neutral; clear smooth boundary.

Btg1—14 to 19 inches; dark grayish brown (2.5Y 4/2) loam; moderate fine subangular blocky structure; friable; common fine roots; common distinct black (10YR 2/1) organo-clay films on faces of peds; common black (N 2.5/0) wormcasts; few fine black (10YR 2/1) iron and manganese oxide concretions throughout; few fine prominent yellowish brown (10YR 5/8) masses of iron accumulation in the matrix; neutral; clear smooth boundary.

Btg2—19 to 25 inches; grayish brown (2.5Y 5/2) sandy clay loam; moderate fine and medium subangular blocky structure; friable; common fine roots; many distinct dark grayish brown (2.5Y 4/2) clay films on faces of peds; common black (N 2.5/0) wormcasts; few fine prominent yellowish brown (10YR 5/8) masses of iron accumulation in the matrix; 10 percent gravel; neutral; abrupt smooth boundary.

BCg—25 to 28 inches; 65 percent dark grayish brown (2.5Y 4/2) and 35 percent very dark brown (10YR 2/2) sandy loam; weak medium subangular blocky structure; very friable; few fine roots; 12 percent gravel; slightly effervescent; slightly alkaline; abrupt smooth boundary.

2Cg1—28 to 32 inches; light olive brown (2.5Y 5/3) gravelly sand; single grain; loose; few fine prominent dark reddish gray (5YR 4/2) iron depletions in the matrix; 20 percent gravel; strongly effervescent; moderately alkaline; abrupt smooth boundary.

2Cg2—32 to 36 inches; dark grayish brown (2.5Y 4/2) gravelly sandy loam with three 1/4-inch-thick strata of black (10YR 2/1) sandy loam; massive; friable; 25 percent gravel; strongly effervescent; moderately alkaline; abrupt smooth boundary.

2Cg3—36 to 60 inches; 60 percent light olive brown (2.5Y 5/3) and 40 percent light brownish gray (2.5Y 6/2) very gravelly sand; single grain; loose; 45 percent gravel; strongly effervescent; moderately alkaline.

MLRA Series Range in Characteristics

Thickness of the mollic epipedon: 10 to 20 inches
Depth to sandy and gravelly deposits: 20 to 40 inches
Depth to carbonates: 20 to 40 inches
Thickness of the solum: 24 to 40 inches

Ap or A horizon:
Hue—10YR, 2.5Y, or N
Value—2 or 3
Chroma—0 to 2
Texture—loam, clay loam, silty clay loam, or silt loam

Btg horizon:
Hue—10YR, 2.5Y, 5Y, or N
Value—4 to 6
Chroma—0 to 2
Texture—clay loam, loam, sandy clay loam, or silty clay loam
Content of gravel—less than 15 percent

2Cg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 to 4
Texture—the gravelly, very gravelly, or extremely gravelly analogs of sand, loamy sand, coarse sand, or loamy coarse sand
Content of gravel—30 to 70 percent

329A—Will loam, 0 to 2 percent slopes

Setting

Landform: Outwash plains and stream terraces
Position on the landform: Footslopes and toeslopes
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the “Soil Properties” section in Part II of this publication.

Composition

Will and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that contain sandy and gravelly deposits at a depth of more than 40 inches or less than 20 inches
- soils that contain less sand and more silt in the upper one-half of the profile
- soils that have no subsurface layer

Dissimilar soils:

- the somewhat poorly drained Kane soils in the higher positions on the landform
- calcareous soils in positions on the landform similar to those of the Will soil

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- "Agronomy" section
- "Wildlife Habitat" section
- "Engineering" section
- "Soil Properties" section

Windere Series

Drainage class: Moderately well drained
Permeability: Moderate
Landform: Moraines and till plains
Parent material: Silty material and the underlying loamy till
Slope range: 0 to 4 percent
Taxonomic classification: Fine-silty, mixed, mesic Oxyaquic Hapludalfs

Typical Pedon for MLRA 95B

Typical pedon of Windere silt loam, 2 to 4 percent slopes, 2,200 feet north and 1,300 feet west of the southeast corner of sec. 18, T. 46 N., R. 5 E.

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak medium subangular blocky structure parting to weak medium granular; friable; common very fine roots; neutral; abrupt smooth boundary.

Bt1—9 to 17 inches; dark yellowish brown (10YR 4/4) silty clay loam; weak fine and medium subangular blocky structure; friable; common very fine roots; common distinct brown (10YR 4/3) clay films on faces of peds and in pores; few distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds and in pores; moderately acid; clear smooth boundary.

Bt2—17 to 26 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate fine and medium subangular blocky structure; friable; common very fine roots; common distinct brown (10YR 4/3) and few dark brown (10YR 3/3) clay films on faces of peds and in pores; moderately acid; clear smooth boundary.

Bt3—26 to 31 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium subangular blocky structure; friable; common very fine roots; many distinct brown (10YR 4/3) and few distinct dark brown (10YR 3/3) clay films on faces of peds and in pores; slightly acid; clear smooth boundary.

2Bt4—31 to 36 inches; dark yellowish brown (10YR 4/4) clay loam; moderate medium subangular blocky structure; friable; few very fine roots; few distinct brown (10YR 4/3) and dark brown (10YR 3/3) clay films on faces of peds and in pores; common fine prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; common fine distinct grayish brown (10YR 5/2) iron depletions in the matrix; 2 percent gravel; neutral; clear wavy boundary.

2Bt5—36 to 50 inches; strong brown (7.5YR 4/6) clay loam; weak medium and coarse subangular blocky structure; friable; few very fine roots; few distinct brown (7.5YR 4/3) and dark brown (7.5YR 3/3) clay films on faces of peds and in pores; common fine and medium faint strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; common fine prominent grayish brown (10YR 5/2) iron depletions in the matrix; 5 percent gravel; neutral; clear smooth boundary.

2C—50 to 65 inches; yellowish brown (10YR 5/4) loam; massive; friable; many medium and coarse faint dark yellowish brown (10YR 4/4) masses of iron accumulation in the matrix: common fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; 10 percent gravel; strongly effervescent; slightly alkaline.

MLRA Series Range in Characteristics

Thickness of silty material: 22 to 40 inches
Depth to carbonates: 36 to 60 inches
Thickness of the solum: 36 to 60 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 to 3
Texture—silt loam

Bt horizon:
Hue—10YR
Value—4 to 6
Chroma—3 or 4
Texture—silty clay loam or silt loam

2Bt horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—2 to 6
Texture—clay loam or loam

2C horizon:
Hue—7.5YR or 10YR

Value—4 to 6
Chroma—2 to 6
Texture—loam or sandy loam
Content of gravel—3 to 15 percent

545A—Windere silt loam, 0 to 2 percent slopes

Setting

Landform: Moraines and till plains
Position on the landform: Summits
Slope range: 0 to 2 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the "Soil Properties" section in Part II of this publication.

Composition

Windere and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a lighter colored surface layer
- soils that have a thicker surface layer
- soils that contain carbonates at a depth of less than 36 inches
- soils that contain more sand in the upper and middle parts of the subsoil
- soils that have a seasonal high water table at a depth of more than 3.5 feet

Dissimilar soils:
- the poorly drained Pella soils in depressions and drainageways
- the somewhat poorly drained Torox soils in the lower positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- "Agronomy" section
- "Forestland" section
- "Wildlife Habitat" section
- "Engineering" section
- "Soil Properties" section

545B—Windere silt loam, 2 to 4 percent slopes

Setting

Landform: Moraines and till plains
Position on the landform: Summits, shoulders, and backslopes
Slope range: 2 to 4 percent

A typical soil series description with range in characteristics is included, in alphabetical order, in this section. Additional information specific to this map unit, such as horizon depth and textures, is available in the "Soil Properties" section in Part II of this publication.

Composition

Windere and similar soils: 85 percent
Dissimilar soils: 15 percent

Similar soils:
- soils that have a lighter colored surface layer
- soils that have a thicker surface layer
- soils that contain carbonates at a depth of less than 36 inches
- soils that contain more sand in the upper and middle parts of the subsoil
- soils that have a seasonal high water table at a depth of more than 3.5 feet

Dissimilar soils:
- the poorly drained Pella soils in depressions and drainageways
- the somewhat poorly drained Torox soils in the lower positions on the landform

Management

For general and detailed information about managing this map unit, see the following sections in Part II of this publication:

- "Agronomy" section
- "Forestland" section
- "Wildlife Habitat" section
- "Engineering" section
- "Soil Properties" section

References

American Association of State Highway and Transportation Officials (AASHTO). 2000. Standard specifications for transportation materials and methods of sampling and testing. 20th edition, 2 volumes.

American Society for Testing and Materials (ASTM). 2001. Standard classification of soils for engineering purposes. ASTM Standard D 2487-00.

Berg, R.C., J.P. Kempton, L.R. Follmer, D.P. McKenna, R.J. Krumm, J.M. Masters, R.C. Anderson, R.L. Meyers, J.E. King, H.E. Canfield, and D.M. Mickelson. 1985. Illinoian and Wisconsinan stratigraphy and environments in northern Illinois. Illinois State Geological Survey Guidebook 19.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep water habitats of the United States. U.S. Fish and Wildlife Service. FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. February 24, 1995. Hydric soils of the United States.

Fehrenbacher, J.B., R.A. Pope, I.J. Jansen, J.D. Alexander, and B.W. Ray. 1978. Soil productivity in Illinois. University of Illinois, College of Agriculture, Cooperative Extension Service Circular 1156.

Hurt, G.W., P.M. Whited, and R.F. Pringle, editors. Version 4.0, 1998. Field indicators of hydric soils in the United States.

Illinois Cooperative Crop Reporting Service. 1995. Illinois agricultural statistics annual summary. Bulletin 95-1.

Jenny, Hans. 1941. Factors of soil formation.

Leighton, M.M., G.E. Ekblaw, and L. Horberg. 1948. Physiographic divisions of Illinois. Illinois State Geological Survey Report of Investigations 129.

Masters, J.M. 1978. Sand and gravel and peat resources in northeastern Illinois. Illinois State Geological Survey Circular 503.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Ray, B.W., and H.L. Wascher. 1965. McHenry County soils. University of Illinois Agricultural Experiment Station Soil Report 81.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

Soil Survey Staff. 1998. Keys to soil taxonomy. 8th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture. 1961. Land capability classification. Soil Conservation Service, U.S. Department of Agriculture Handbook 210.

United States Department of Commerce, Bureau of the Census. 1990. 1990 census of population and housing.

United States Department of Commerce, Bureau of the Census. 1992. 1992 census of agriculture.

Glossary

Ablation till. Loose, permeable till deposited during the final downwasting of glacial ice. Lenses of crudely sorted sand and gravel are common.

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Alpha,alpha-dipyridyl. A dye that when dissolved in 1N ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction indicates a type of redoximorphic feature.

Animal unit month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Aquic conditions. Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Association, soil. A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Backslope. The position that forms the steepest and generally linear, middle portion of a hillslope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.

Basal till. Compact glacial till deposited beneath the ice.

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bench terrace. A raised, level or nearly level strip of earth constructed on or nearly on a contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

Bottom land. The normal flood plain of a stream, subject to flooding.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil,

expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions. Low-chroma zones having a low content of iron, manganese, and clay because of the chemical reduction of iron and manganese and the removal of iron, manganese, and clay. A type of redoximorphic depletion.

Clayey soil. Silty clay, sandy clay, or clay.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Coarse textured soil. Sand or loamy sand.

Cobble (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Colluvium. Soil material or rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions. Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage. Any tillage and planting system in which a cover of crop residue is maintained on at least 30 percent of the soil surface after planting in order to reduce the hazard of water erosion; in areas where soil blowing is the primary concern, a system that maintains a cover of at least 1,000 pounds of flat residue of small grain or the equivalent during the critical erosion period.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the “Soil Survey Manual.”

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Coprogenous earth (sedimentary peat). Fecal material deposited in water by aquatic organisms.

Corrosion. Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cropping system. Growing crops according to a planned system of rotation and management practices.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Dense layer (in tables). A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Depth, soil. Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

Dissimilar soils. Soils that differ sufficiently from the named soil to affect major interpretations. Dissimilar soils are named in the map unit description or are briefly described in a generic fashion.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—***excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,*** and ***very poorly drained***. These classes are defined in the “Soil Survey Manual.”

Drainage, surface. Runoff, or surface flow of water, from an area.

Drainageway. An area of ground at a lower elevation than the surrounding ground and in which water collects and is drained to a closed depression or lake or to a drainageway at a lower elevation. A drainageway may or may not have distinctly incised channels at its upper reaches or throughout its course.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Endosaturation. A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

Episaturation. A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Escarpment. A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Synonym: scarp.

Excess fines (in tables). Excess silt and clay in the soil. The soil does not provide a source of gravel or sand for construction purposes.

Fast intake (in tables). The rapid movement of water into the soil.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called ***normal field capacity, normal moisture capacity,*** or ***capillary capacity***.

Fine textured soil. Sandy clay, silty clay, or clay.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Footslope. The position that forms the inner, gently

inclined surface at the base of a hillslope. In profile, footslopes are commonly concave. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).

Forb. Any herbaceous plant not a grass or a sedge.

Frost action (in tables). Freezing and thawing of soil moisture. Frost action can damage roads, buildings and other structures, and plant roots.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Glacial drift. Pulverized and other rock material transported by glacial ice and then deposited. Also, the sorted and unsorted material deposited by streams flowing from glaciers.

Glacial outwash. Gravel, sand, and silt, commonly stratified, deposited by glacial meltwater.

Glacial till. Unsorted, nonstratified glacial drift consisting of clay, silt, sand, and boulders transported and deposited by glacial ice.

Glaciofluvial deposits. Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur as kames, eskers, deltas, and outwash plains.

Glaciolacustrine deposits. Material ranging from fine clay to sand derived from glaciers and deposited in glacial lakes mainly by glacial meltwater. Many deposits are interbedded or laminated.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water. Water filling all the unblocked pores of the material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock. Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Head slope. A geomorphic component of hills consisting of a laterally concave area of a hillside, especially at the head of a drainageway. The overland waterflow is converging.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the “Soil Survey Manual.” The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or

unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2 .... very low
0.2 to 0.4 .... low
0.4 to 0.75 .... moderately low
0.75 to 1.25 .... moderate
1.25 to 1.75 .... moderately high
1.75 to 2.5 .... high
More than 2.5 .... very high

Interfluve. An elevated area between two drainageways that sheds water to those drainageways.

Intermittent stream. A stream, or reach of a stream, that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Iron depletions. Low-chroma zones having a low content of iron and manganese oxide because of chemical reduction and removal, but having a clay content similar to that of the adjacent matrix. A type of redoximorphic depletion.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Kame. A moundlike hill of glacial drift, composed chiefly of stratified sand and gravel.

Kame terrace. A terracelike ridge consisting of stratified sand and gravel that were deposited by a meltwater stream flowing between a melting glacier and a higher valley wall or lateral moraine and that remained after the disappearance of the ice. It is commonly pitted with kettles and has an irregular ice-contact slope.

Lacustrine deposit. Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Lake plain. A surface marking the floor of an extinct lake, filled in by well sorted, stratified sediments.

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loamy soil. Coarse sandy loam, sandy loam, fine sandy loam, very fine sandy loam, loam, silt loam, silt, clay loam, sandy clay loam, or silty clay loam.

Loess. Fine grained material, dominantly of silt-sized particles, deposited by wind.

Low strength. The soil is not strong enough to support loads.

Major land resource area (MLRA). Major land resource areas, or MLRA's, are geographically associated land resource areas. They are designated by Arabic numbers and identified by a descriptive geographic name.

Masses. Concentrations of substances in the soil matrix that do not have a clearly defined boundary with the surrounding soil material and cannot be removed as a discrete unit. Common compounds making up masses are calcium carbonate, gypsum or other soluble salts, iron oxide, and manganese oxide. Masses consisting of iron oxide or manganese oxide generally are considered a type of redoximorphic concentration.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon. A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

Moraine. An accumulation of earth, stones, and other debris deposited by a glacier. Some types are terminal, lateral, medial, and ground.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—***few, common,*** and ***many;*** size—***fine, medium,*** and ***coarse;*** and contrast—***faint, distinct,*** and ***prominent***. The size measurements are of the diameter along the greatest dimension. ***Fine*** indicates less than 5 millimeters (about 0.2 inch); ***medium,*** from 5 to 15 millimeters (about 0.2 to 0.6 inch); and ***coarse,*** more than 15 millimeters (about 0.6 inch).

Muck. Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nose slope. A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside. The overland waterflow is predominantly divergent.

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

Outwash plain. A landform of mainly sandy or coarse textured material of glaciofluvial origin. An outwash plain is commonly smooth; where pitted, it generally is low in relief.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil adversely affects the specified use.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the "Soil Survey Manual." In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as "permeability." Terms describing permeability, measured in inches per hour, are as follows:

Extremely slow	0.0 to 0.01 inch
Very slow	0.01 to 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poor filter (in tables). Because of rapid or very rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid	less than 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Redoximorphic concentrations. Nodules, concretions, soft masses, pore linings, and other features resulting from the accumulation of iron or manganese oxide. An indication of chemical reduction and oxidation resulting from saturation.

Redoximorphic depletions. Low-chroma zones from which iron and manganese oxide or a combination of iron and manganese oxide and clay has been removed. These zones are indications of the chemical reduction of iron resulting from saturation.

Redoximorphic features. Redoximorphic concentrations, redoximorphic depletions, reduced matrices, a positive reaction to alpha,alpha-dipyridyl, and other features indicating the chemical reduction and oxidation of iron and manganese compounds resulting from saturation.

Reduced matrix. A soil matrix that has low chroma in situ because of chemically reduced iron (Fe II).

The chemical reduction results from nearly continuous wetness. The matrix undergoes a change in hue or chroma within 30 minutes after exposure to air as the iron is oxidized (Fe III). A type of redoximorphic feature.

Regolith. The unconsolidated mantle of weathered rock and soil material on the earth's surface; the loose earth material above the solid rock.

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rill. A steep-sided channel resulting from accelerated erosion. A rill generally is a few inches deep and not wide enough to be an obstacle to farm machinery.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rock outcrop. Exposures of bare bedrock other than lava flows and rock-lined pits.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandy soil. Sand or loamy sand.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shoulder. The position that forms the uppermost inclined surface near the top of a hillslope. It is a transition from backslope to summit. The surface is dominantly convex in profile and erosional in origin.

Shrink-swell (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Side slope. A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then

multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey, the slope classes are as follows:

Nearly level	0 to 2 percent
Gently sloping	2 to 4 percent
Moderately sloping	4 to 8 percent
Strongly sloping	8 to 15 percent
Moderately steep	15 to 25 percent
Steep	25 to 45 percent
Very steep	more than 45 percent

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Slow intake (in tables). The slow movement of water into the soil.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief and by the passage of time.

Soil quality. The fitness of a specific kind of soil to function within its surroundings, support plant and animal productivity, maintain or enhance water and air quality, and support human health and habitation.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stream channel. The hollow bed where a natural stream of surface water flows or may flow; the deepest or central part of the bed, formed by the main current and covered more or less continuously by water.

Stream terrace. One of a series of platforms in a stream valley, flanking and more or less parallel to the stream channel. It originally formed near the level of the stream and is the dissected remnants of an abandoned flood plain, streambed, or valley floor that were produced during a former stage of erosion or deposition.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—***platy*** (laminated), ***prismatic*** (vertical axis of aggregates longer than horizontal), ***columnar*** (prisms with rounded tops), ***blocky*** (angular or subangular), and ***granular***. ***Structureless*** soils are either ***single grain*** (each grain by itself, as in dune sand) or ***massive*** (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. The part of the soil below the solum.

Subsurface layer. Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Summit. The topographically highest position of a hillslope. It has a nearly level (planar or only slightly convex) surface.

Surface layer. The soil ordinarily moved in tillage, or

its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the “plow layer,” or the “Ap horizon.”

Surface soil. The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.

Terminal moraine. A belt of thick glacial drift that generally marks the termination of important glacial advances.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are ***sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,*** and ***clay***. The sand, loamy sand, and sandy loam classes may be further divided by specifying “coarse,” “fine,” or “very fine.”

Thin layer (in tables). Otherwise suitable soil material that is too thin for the specified use.

Till plain. An extensive area of nearly level to undulating soils underlain by glacial till.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope. The position that forms the gently inclined surface at the base of a hillslope. Toeslopes in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Understory. Any plants in a forest community that grow to a height of less than 5 feet.

Upland. Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth’s surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow. The uprooting and tipping over of trees by the wind.

Tables

Table 1.--Temperature and Precipitation

(Recorded in the period 1961-90 at Marengo, Illinois)

Month	Temperature: Average daily maximum	Temperature: Average daily minimum	Temperature: Average	Temperature: 2 years in 10 will have-- Maximum temperature higher than--	Temperature: 2 years in 10 will have-- Minimum temperature lower than--	Temperature: Average number of growing degree days*	Precipitation: Average	Precipitation: 2 years in 10 will have-- Less than--	Precipitation: 2 years in 10 will have-- More than--	Precipitation: Average number of days with 0.10 inch or more	Precipitation: Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January----	27.4	9.1	18.3	52	-22	0	1.54	0.55	2.37	4	9.7
February---	32.6	13.4	23.0	57	-15	0	1.12	.58	1.67	3	7.1
March------	44.8	25.0	34.9	76	-1	14	2.37	1.23	3.38	6	6.3
April------	59.4	35.8	47.6	86	15	88	3.64	2.33	4.83	7	1.7
May--------	72.1	45.9	59.0	92	27	301	3.45	2.15	4.62	7	.2
June-------	81.6	55.8	68.7	98	38	558	4.39	2.69	5.91	7	.0
July-------	85.1	60.6	72.9	99	44	707	3.97	2.78	5.07	6	.0
August-----	82.6	58.2	70.4	96	41	633	4.32	1.88	6.39	6	.0
September--	75.4	50.3	62.8	93	31	390	3.94	1.61	6.15	6	.0
October----	63.2	39.3	51.3	86	19	141	2.67	1.13	3.98	5	.2
November---	47.3	28.9	38.1	72	6	20	2.67	1.37	3.80	5	2.0
December---	32.3	15.5	23.9	59	-13	1	2.09	1.04	3.01	5	8.4
Yearly:											
Average---	58.7	36.5	47.6	---	---	---	---	---	---	---	---
Extreme---	---	---	---	100	-23	---	---	---	---	---	---
Total-----	---	---	---	---	---	2,854	36.18	30.73	41.07	67	35.5

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50 degrees F).

Table 2.--Freeze Dates in Spring and Fall

(Recorded in the period 1961-90 at Marengo, Illinois)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	Apr. 24	May 12	May 23
2 years in 10 later than--	Apr. 20	May 7	May 18
5 years in 10 later than--	Apr. 14	Apr. 27	May 8
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 11	Sept. 27	Sept. 24
2 years in 10 earlier than--	Oct. 16	Oct. 3	Sept. 27
5 years in 10 earlier than--	Oct. 26	Oct. 14	Oct. 3

Table 3.--Growing Season

(Recorded in the period 1961-90 at Marengo, Illinois)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	176	144	132
8 years in 10	183	153	137
5 years in 10	194	170	148
2 years in 10	206	188	159
1 year in 10	213	197	165

Table 4.--Classification of the Soils

(An asterisk in the first column indicates a taxadjunct to the series. See text for a description of those characteristics that are outside the range of the series)

Soil name	Family or higher taxonomic class
Ashkum	Fine, mixed, mesic Typic Endoaquolls
Beecher	Fine, illitic, mesic Udollic Epiaqualfs
Bowes	Fine-silty, mixed, mesic Mollic Hapludalfs
Brenton	Fine-silty, mixed, mesic Aquic Argiudolls
Camden	Fine-silty, mixed, mesic Typic Hapludalfs
Caprell	Fine-loamy, mixed, mesic Typic Hapludalfs
Casco	Fine-loamy over sandy or sandy-skeletal, mixed, mesic Typic Hapludalfs
Comfrey	Fine-loamy, mixed, mesic Cumulic Endoaquolls
Dakota	Fine-loamy over sandy or sandy-skeletal, mixed, mesic Typic Argiudolls
Danabrook	Fine-silty, mixed, mesic Oxyaquic Argiudolls
*Dickinson	Coarse-loamy, mixed, mesic Typic Hapludolls
Dresden	Fine-loamy over sandy or sandy-skeletal, mixed, mesic Mollic Hapludalfs
Drummer	Fine-silty, mixed, mesic Typic Endoaquolls
Dunham	Fine-silty, mixed, mesic Typic Endoaquolls
Elburn	Fine-silty, mixed, mesic Aquic Argiudolls
Elliott	Fine, illitic, mesic Aquic Argiudolls
Fox	Fine-loamy over sandy or sandy-skeletal, mixed, mesic Typic Hapludalfs
Geryune	Fine-silty, mixed, mesic Oxyaquic Argiudolls
*Griswold	Fine-loamy, mixed, mesic Typic Argiudolls
Grundelein	Fine-silty, mixed, mesic Aquic Argiudolls
Harpster	Fine-silty, mesic Typic Calciaquolls
Harvard	Fine-silty, mixed, mesic Mollic Hapludalfs
Herbert	Fine-silty, mixed, mesic Udollic Epiaqualfs
Hoopeston	Coarse-loamy, mixed, mesic Aquic Hapludolls
Hooppole	Fine-loamy, mixed, calcareous, mesic Typic Endoaquolls
Houghton	Euic, mesic Typic Medisaprists
Kane	Fine-loamy over sandy or sandy-skeletal, mixed, mesic Aquic Argiudolls
Kidami	Fine-loamy, mixed, mesic Oxyaquic Hapludalfs
Kidder	Fine-loamy, mixed, mesic Typic Hapludalfs
Kish	Fine-loamy, mixed, calcareous, mesic Typic Endoaquolls
Lahoguess	Fine-loamy, mixed, mesic Aquic Argiudolls
La Rose	Fine-loamy, mixed, mesic Typic Argiudolls
Lena	Euic, mesic Typic Medisaprists
Lisbon	Fine-silty, mixed, mesic Aquic Argiudolls
Lismod	Fine-silty, mixed, mesic Aquic Argiudolls
Lorenzo	Fine-loamy over sandy or sandy-skeletal, mixed, mesic Typic Argiudolls
Martinsville	Fine-loamy, mixed, mesic Typic Hapludalfs
Martinton	Fine, illitic, mesic Aquic Argiudolls
McHenry	Fine-loamy, mixed, mesic Typic Hapludalfs
Millbrook	Fine-silty, mixed, mesic Udollic Endoaqualfs
Millington	Fine-loamy, mixed, calcareous, mesic Cumulic Endoaquolls
Millstream	Fine-silty, mixed, mesic Aquollic Hapludalfs
Nappanee	Fine, illitic, mesic Aeric Epiaqualfs
Octagon	Fine-loamy, mixed, mesic Oxyaquic Hapludalfs
Orthents, loamy	Fine-loamy, mixed, mesic Typic Udorthents
Ozaukee	Fine, illitic, mesic Oxyaquic Hapludalfs
Palms	Loamy, mixed, euic, mesic Terric Medisaprists
Parmod	Fine-loamy, mixed, mesic Typic Argiudolls
*Parr	Fine-loamy, mixed, mesic Oxyaquic Argiudolls
Pella	Fine-silty, mixed, mesic Typic Endoaquolls
Peotone	Fine, smectitic, mesic Cumulic Vertic Endoaquolls
Piscasaw	Fine-silty, mixed, mesic Typic Hapludalfs
Proctor	Fine-silty, mixed, mesic Typic Argiudolls
Ringwood	Fine-loamy, mixed, mesic Typic Argiudolls
Rockton	Fine-loamy, mixed, mesic Typic Argiudolls
Rodman	Sandy-skeletal, mixed, mesic Typic Hapludolls
Rush	Fine-silty, mixed, mesic Typic Hapludalfs
Selmass	Fine-loamy, mixed, mesic Typic Endoaquolls
Senachwine	Fine-loamy, mixed, mesic Typic Hapludalfs
Thorp	Fine-silty, mixed, mesic Argiaquic Argialbolls
Torox	Fine-silty, mixed, mesic Aquic Hapludalfs

Table 4.--Classification of the Soils--Continued

Soil name	Family or higher taxonomic class
Troxel	Fine-silty, mixed, mesic Pachic Argiudolls
*Varna	Fine, illitic, mesic Oxyaquic Argiudolls
Virgil	Fine-silty, mixed, mesic Udollic Endoaqualfs
*Warsaw	Fine-loamy over sandy or sandy-skeletal, mixed, mesic Typic Argiudolls
Waupecan	Fine-silty, mixed, mesic Typic Argiudolls
Will	Fine-loamy over sandy or sandy-skeletal, mixed, mesic Typic Endoaquolls
Windere	Fine-silty, mixed, mesic Oxyaquic Hapludalfs

Table 5.--Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
59A	Lisbon silt loam, 0 to 2 percent slopes	2,014	0.5
59B	Lisbon silt loam, 2 to 4 percent slopes	1,181	0.3
60C2	La Rose loam, 5 to 10 percent slopes, eroded	1,042	0.3
62A	Herbert silt loam, 0 to 2 percent slopes	1,181	0.3
67A	Harpster silty clay loam, 0 to 2 percent slopes	3,686	0.9
87A	Dickinson sandy loam, 0 to 2 percent slopes	4,532	1.2
87B	Dickinson sandy loam, 2 to 5 percent slopes	1,329	0.3
87B2	Dickinson sandy loam, 2 to 5 percent slopes, eroded	132	*
100A	Palms muck, 0 to 2 percent slopes	1,736	0.4
103A	Houghton muck, 0 to 2 percent slopes	7,754	2.0
104A	Virgil silt loam, 0 to 2 percent slopes	2,280	0.6
134A	Camden silt loam, 0 to 2 percent slopes	1,299	0.3
134B	Camden silt loam, 2 to 5 percent slopes	1,236	0.3
146A	Elliott silt loam, 0 to 2 percent slopes	1,817	0.5
146B	Elliott silt loam, 2 to 4 percent slopes	3,071	0.8
148A	Proctor silt loam, 0 to 2 percent slopes	3,034	0.8
148B	Proctor silt loam, 2 to 5 percent slopes	2,075	0.5
149A	Brenton silt loam, 0 to 2 percent slopes	6,528	1.7
152A	Drummer silty clay loam, 0 to 2 percent slopes	2,973	0.8
153A	Pella silty clay loam, 0 to 2 percent slopes	20,872	5.3
153A+	Pella silt loam, 0 to 2 percent slopes, overwash	1,479	0.4
172A	Hoopeston sandy loam, 0 to 2 percent slopes	834	0.2
189A	Martinton silt loam, 0 to 2 percent slopes	294	0.1
197A	Troxel silt loam, 0 to 2 percent slopes	1,655	0.4
198A	Elburn silt loam, 0 to 2 percent slopes	5,438	1.4
206A	Thorp silt loam, 0 to 2 percent slopes	1,471	0.4
210A	Lena muck, 0 to 2 percent slopes	1,934	0.5
219A	Millbrook silt loam, 0 to 2 percent slopes	3,466	0.9
221B	Parr silt loam, 2 to 5 percent slopes	5,047	1.3
221C2	Parr silt loam, 5 to 10 percent slopes, eroded	1,016	0.3
223B	Varna silt loam, 2 to 4 percent slopes	4,672	1.2
223C2	Varna silt loam, 4 to 6 percent slopes, eroded	3,404	0.9
223D2	Varna silt loam, 6 to 12 percent slopes, eroded	895	0.2
228B	Nappanee silt loam, 2 to 4 percent slopes	284	0.1
232A	Ashkum silty clay loam, 0 to 2 percent slopes	4,963	1.3
290A	Warsaw loam, 0 to 2 percent slopes	4,653	1.2
290B	Warsaw loam, 2 to 4 percent slopes	6,755	1.7
290C2	Warsaw loam, 4 to 6 percent slopes, eroded	1,846	0.5
297A	Ringwood silt loam, 0 to 2 percent slopes	3,447	0.9
297B	Ringwood silt loam, 2 to 4 percent slopes	16,839	4.3
298B	Beecher silt loam, 2 to 4 percent slopes	534	0.1
310B	McHenry silt loam, 2 to 4 percent slopes	13,321	3.4
318A	Lorenzo loam, 0 to 2 percent slopes	405	0.1
318B	Lorenzo loam, 2 to 4 percent slopes	2,449	0.6
318C2	Lorenzo loam, 4 to 6 percent slopes, eroded	2,230	0.6
318D2	Lorenzo loam, 6 to 12 percent slopes, eroded	1,047	0.3
323B	Casco loam, 2 to 4 percent slopes	885	0.2
323C2	Casco loam, 4 to 6 percent slopes, eroded	3,999	1.0
323C3	Casco clay loam, 4 to 6 percent slopes, severely eroded	750	0.2
323D2	Casco loam, 6 to 12 percent slopes, eroded	4,137	1.1
323D3	Casco clay loam, 6 to 12 percent slopes, severely eroded	1,338	0.3
325A	Dresden silt loam, 0 to 2 percent slopes	1,005	0.3
325B	Dresden silt loam, 2 to 4 percent slopes	2,522	0.6
327A	Fox silt loam, 0 to 2 percent slopes	1,123	0.3
327B	Fox silt loam, 2 to 4 percent slopes	7,484	1.9
327C2	Fox silt loam, 4 to 6 percent slopes, eroded	4,632	1.2
327D2	Fox loam, 6 to 12 percent slopes, eroded	973	0.2
329A	Will loam, 0 to 2 percent slopes	3,356	0.9
330A	Peotone silty clay loam, 0 to 2 percent slopes	990	0.3
343A	Kane silt loam, 0 to 2 percent slopes	4,330	1.1
344A	Harvard silt loam, 0 to 2 percent slopes	562	0.1

See footnote at end of table.

Table 5.--Acreage and Proportionate Extent of the Soils--Continued

Map symbol	Soil name	Acres	Percent
344B	Harvard silt loam, 2 to 5 percent slopes	486	0.1
361B	Kidder loam, 2 to 4 percent slopes	898	0.2
361C	Kidder loam, 4 to 6 percent slopes	2,054	0.5
361C2	Kidder loam, 4 to 6 percent slopes, eroded	10,855	2.8
361C3	Kidder clay loam, 4 to 6 percent slopes, severely eroded	378	0.1
361D2	Kidder loam, 6 to 12 percent slopes, eroded	5,376	1.4
361D3	Kidder clay loam, 6 to 12 percent slopes, severely eroded	1,491	0.4
361E	Kidder loam, 12 to 20 percent slopes	1,521	0.4
361E2	Kidder loam, 12 to 20 percent slopes, eroded	1,480	0.4
361F	Kidder silt loam, 20 to 30 percent slopes	768	0.2
363B	Griswold loam, 2 to 4 percent slopes	645	0.2
363C2	Griswold loam, 4 to 6 percent slopes, eroded	6,109	1.6
363D2	Griswold loam, 6 to 12 percent slopes, eroded	1,179	0.3
369A	Waupecan silt loam, 0 to 2 percent slopes	6,222	1.6
369B	Waupecan silt loam, 2 to 4 percent slopes	2,336	0.6
379A	Dakota loam, 0 to 2 percent slopes	8,146	2.1
379B	Dakota loam, 2 to 4 percent slopes	750	0.2
488A	Hooppole loam, 0 to 2 percent slopes	4,676	1.2
503B	Rockton silt loam, 2 to 6 percent slopes	78	*
512A	Danabrook silt loam, 0 to 2 percent slopes	204	0.1
512B	Danabrook silt loam, 2 to 5 percent slopes	2,533	0.6
523A	Dunham silty clay loam, 0 to 2 percent slopes	12,655	3.2
526A	Grundelein silt loam, 0 to 2 percent slopes	7,483	1.9
527B	Kidami silt loam, 2 to 4 percent slopes	7,158	1.8
527C	Kidami silt loam, 4 to 6 percent slopes	2,831	0.7
527C2	Kidami loam, 4 to 6 percent slopes, eroded	9,900	2.5
527D	Kidami silt loam, 6 to 12 percent slopes	928	0.2
527D2	Kidami loam, 6 to 12 percent slopes, eroded	2,443	0.6
527D3	Kidami clay loam, 6 to 12 percent slopes, severely eroded	1,359	0.3
528A	Lahoguess loam, 0 to 2 percent slopes	3,668	0.9
529A	Selmass loam, 0 to 2 percent slopes	3,095	0.8
530B	Ozaukee silt loam, 2 to 4 percent slopes	1,454	0.4
530C2	Ozaukee silt loam, 4 to 6 percent slopes, eroded	2,066	0.5
530C3	Ozaukee silty clay loam, 4 to 6 percent slopes, severely eroded	257	0.1
530D2	Ozaukee silt loam, 6 to 12 percent slopes, eroded	683	0.2
530D3	Ozaukee silty clay loam, 6 to 12 percent slopes, severely eroded	321	0.1
530E	Ozaukee silt loam, 12 to 20 percent slopes	564	0.1
543B	Piscasaw silt loam, 2 to 4 percent slopes	4,098	1.0
544A	Torox silt loam, 0 to 2 percent slopes	1,346	0.3
545A	Windere silt loam, 0 to 2 percent slopes	367	0.1
545B	Windere silt loam, 2 to 4 percent slopes	790	0.2
557A	Millstream silt loam, 0 to 2 percent slopes	5,328	1.4
570A	Martinsville silt loam, 0 to 2 percent slopes	565	0.1
570B	Martinsville silt loam, 2 to 4 percent slopes	864	0.2
570C2	Martinsville silt loam, 4 to 6 percent slopes, eroded	492	0.1
618E	Senachwine silt loam, 12 to 20 percent slopes	511	0.1
618F	Senachwine silt loam, 20 to 30 percent slopes	281	0.1
624B	Caprell silt loam, 2 to 4 percent slopes	739	0.2
624C2	Caprell silt loam, 4 to 6 percent slopes, eroded	1,552	0.4
624D2	Caprell silt loam, 6 to 12 percent slopes, eroded	184	*
624E	Caprell silt loam, 12 to 20 percent slopes	40	*
625A	Geryune silt loam, 0 to 2 percent slopes	325	0.1
625B	Geryune silt loam, 2 to 5 percent slopes	269	0.1
626A	Kish loam, 0 to 2 percent slopes	3,507	0.9
635A	Lismod silt loam, 0 to 2 percent slopes	357	0.1
635B	Lismod silt loam, 2 to 4 percent slopes	39	*
636B	Parmod silt loam, 2 to 5 percent slopes	24	*
656B	Octagon silt loam, 2 to 4 percent slopes	1,422	0.4
656C2	Octagon silt loam, 4 to 6 percent slopes, eroded	743	0.2
791A	Rush silt loam, 0 to 2 percent slopes	1,327	0.3

See footnote at end of table.

Table 5.--Acreage and Proportionate Extent of the Soils--Continued

Map symbol	Soil name	Acres	Percent
791B	Rush silt loam, 2 to 4 percent slopes	3,157	0.8
791C2	Rush silt loam, 4 to 6 percent slopes, eroded	747	0.2
792A	Bowes silt loam, 0 to 2 percent slopes	1,351	0.3
792B	Bowes silt loam, 2 to 4 percent slopes	1,597	0.4
802B	Orthents, loamy, undulating	1,221	0.3
865	Pits, gravel	3,964	1.0
969E2	Casco-Rodman complex, 12 to 20 percent slopes, eroded	4,433	1.1
969F	Casco-Rodman complex, 20 to 30 percent slopes	2,842	0.7
1067A	Harpster silt loam, 0 to 2 percent slopes, undrained	712	0.2
1082A	Millington silt loam, 0 to 2 percent slopes, undrained, occasionally flooded	1,936	0.5
1100A	Palms muck, 0 to 2 percent slopes, undrained	427	0.1
1103A	Houghton muck, 0 to 2 percent slopes, undrained	4,576	1.2
1153A	Pella silty clay loam, 0 to 2 percent slopes, undrained	928	0.2
1206A	Thorp silt loam, 0 to 2 percent slopes, undrained	44	*
1210A	Lena muck, 0 to 2 percent slopes, undrained	2,491	0.6
1330A	Peotone silty clay loam, 0 to 2 percent slopes, undrained	480	0.1
1488A	Hooppole loam, 0 to 2 percent slopes, undrained	525	0.1
1529A	Selmass loam, 0 to 2 percent slopes, undrained	79	*
1626A	Kish loam, 0 to 2 percent slopes, undrained	404	0.1
1776A	Comfrey loam, 0 to 2 percent slopes, undrained, occasionally flooded	2,269	0.6
4103A	Houghton muck, 0 to 2 percent slopes, ponded	2,592	0.7
8082A	Millington silt loam, 0 to 2 percent slopes, occasionally flooded	2,460	0.6
8776A	Comfrey loam, 0 to 2 percent slopes, occasionally flooded	6,538	1.7
W	Water	6,991	1.8
	Total	391,220	100.0

* Less than 0.05 percent. The combined extent of the soils assigned an asterisk in the "Percent" column is about 0.3 percent of the survey area.

United States
Department of
Agriculture

Natural
Resources
Conservation
Service

In cooperation with Illinois
Agricultural Experiment
Station

Soil Survey of McHenry County, Illinois

Part II

How To Use This Soil Survey

This survey is divided into three parts. Part I includes general information about the survey area; descriptions of the general soil map units, detailed soil map units, and soil series in the area; and a description of how the soils formed. Part II describes the use and management of the soils and the major soil properties. This part may be updated as further information about soil management becomes available. Part III includes the maps.

The **detailed soil maps** can be useful in planning the use and management of small areas.

To find information about your area of interest, locate that area on the **Index to Map Sheets**. Note the number of the map sheet, and turn to that sheet.

Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Turn to the **Contents** in Part I of this survey, which lists the map units and shows the page where each map unit is described.

The **Contents** in Part II shows which table has data on a specific land use for each detailed soil map unit. Also, see the **Contents** in Part I and Part II for other sections of this publication that may address your specific needs.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, state agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1995. Soil names and descriptions were approved in 1997. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1995. This survey was made cooperatively by the Natural Resources Conservation Service and the Illinois Agricultural Experiment Station. It is part of the technical assistance furnished to the McHenry County Soil and Water Conservation District. Funding was provided by the McHenry County Board and the Illinois Department of Agriculture.

Cover: Ongoing population growth in McHenry County continues to generate changes in land use.

Additional information about the Nation's natural resources is available on the Natural Resources Conservation Service homepage on the World Wide Web. The address is http://www.nrcs.usda.gov.

Contents

Issued 2001

Soil Survey of
McHenry County, Illinois

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

This part of the soil survey includes interpretations for various uses of the soils and data on soil properties. The information can be used to plan the use and management of soils for crops and pasture; as forestland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Interpretive ratings help engineers, planners, and others understand how soil properties influence important nonagricultural uses, such as building site development and construction materials. The ratings indicate the most restrictive soil features affecting the suitability of the soils for these uses.

Soils are rated in their natural state. No unusual modification of the soil site or material is made other than that which is considered normal practice for the rated use. Even though soils may have limitations, it is important to remember that engineers and others can modify soil features or can design or adjust the plans for a structure to compensate for most of the limitations. Most of these practices, however, are costly. The final decision in selecting a site for a particular use generally involves weighing the costs of site preparation and maintenance.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health and highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Tables 1, 2, and 3 provide general information about the climate in the survey area. The classification of the soils is shown in table 4, and the extent of the soils in the survey area is shown in table 5.

Agronomy

General management needed for crops and for hay and pasture is suggested in this section. The system of land capability classification used by the Natural Resources Conservation Service is explained, the estimated yields of the main crops and hay and pasture plants are listed for each soil, important farmland is described, and hydric soils are listed.

Planners of management systems for individual fields or farms should consider obtaining specific information from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

In 1992, McHenry County had about 239,634 acres of cropland (U.S. Department of Commerce, 1992). The major row crops are corn and soybeans. Wheat and oats are the major small grain crops grown. Vegetables, sod, and nursery crops are also grown. Alfalfa is the major forage crop.

The soils in McHenry County have good potential for continued crop production, especially if the latest crop production technology is applied. This soil survey can be used as a guide for applying the latest crop production technologies.

The demand for food and fiber has increased in recent years (fig. 3). As a result, some land of marginal quality has been used for crops. Much of this land is more susceptible to erosion than the more productive land. Also, the number of residential tracts has increased throughout the county. These tracts commonly are in areas of prime farmland. If these trends continue, they could result in a significant decline in the quality and quantity of the land used for food and fiber.

The major management concerns affecting cropland in the county are water erosion, excessive permeability, wetness, ponding, surface crusting, poor tilth, restricted permeability, and droughtiness.

Soil erosion is a potential problem on approximately 49 percent of the cropland. Erosion can be a problem on soils that have slopes of more than 2 percent, such as Danabrook, Kidami, Kidder, and Ringwood soils.

Loss of the surface layer is damaging for several reasons. Soil productivity is reduced as the surface soil is removed and part of the subsoil is incorporated into the plow layer. The subsoil is generally lower in plant nutrients, lower in organic matter, and higher in clay content compared to the surface soil. As the content of organic matter in the plow layer decreases and the content of clay content increases, soil tilth deteriorates, resulting in soil crusting and a reduced rate of water infiltration. Soil erosion results in the sedimentation of streams, rivers, road ditches, and lakes. Pollution by sediments reduces the quality of water for agricultural, municipal, and recreational uses and for fish and wildlife. Removing the sediment generally is expensive. Erosion control helps to minimize this pollution and improves water quality.

Erosion-control measures include both cultural and structural practices. The most widely used practice in the county is conservation tillage, such as mulch tillage and zero tillage. These systems can leave 30 to 90 percent of the surface covered with crop residue. Another cultural practice is the use of a crop rotation that includes 1 or more years of close-growing grasses or legumes. In areas where slopes are long and uniform, terraces and contour farming are also effective in controlling erosion.

Structural practices are needed in drainageways where concentrated runoff flows overland. Soil erosion can be controlled by establishing grassed waterways or building erosion-control structures.

Further information about erosion-control measures suitable for each kind of soil is provided in the Field Office Technical Guide, which is available in local offices of the Natural Resources Conservation Service.

In areas of soils that have excessive permeability, such as Fox and Warsaw soils, the contamination of ground water is a potential risk. These soils contain sandy and gravelly deposits within a depth of 40 inches and are very rapidly permeable in the lower part of the profile.

Several measures can help to limit the amount of deep leaching of nutrients and pesticides that occurs. Applications of fertilizer should be based on the results of soil tests. The local office of the Cooperative Extension Service can help in determining the kinds and proper amounts of nutrients needed. Chemicals should be selected based on their solubility in water, their ability to bind with the soil, and the rate of their

Figure 3.—With the population rising in the county, the demand for nursery crops has increased.

breakdown in the soil. Splitting chemical applications, particularly of nitrogen, is beneficial. This practice reduces the risk of excessive leaching from a one-time application. Another measure for preventing ground-water contamination is planting legumes in a crop rotation or as a cover crop. This practice adds nitrogen to the soil, thereby reducing the amount of nitrogen needed in chemical applications. The practice of crop rotation is also effective in limiting the buildup of weed and insect populations and thus reduces the amount of herbicides and insecticides needed per application. Finally, planting small grain cover crops after fertilized corn crops can be effective in taking up some residual nitrogen from the soil.

Drainage systems have been installed in most areas of poorly drained and somewhat poorly drained soils used as cropland in the county. As a result, these soils are adequately drained for the commonly grown crops. Measures that maintain the drainage system are needed. Poorly drained soils, such as Ashkum, Dunham, Pella, and Selmass soils, have subsurface drainage. In addition, surface tile inlets or shallow surface ditches are required in some areas of poorly drained soils to remove excess water. Some areas of somewhat poorly drained soils are wet long enough that in some years productivity is reduced unless they are artificially drained. Somewhat poorly drained soils, such as Elburn, Elliott, Grundelein, and Millstream soils, have subsurface drainage.

Soil tilth is an important factor influencing the germination of seeds, the amount of runoff, and the rate of water infiltration. Soils that have good tilth are granular and porous and have a high content of organic matter.

Surface crusting can be a problem in areas of Caprell and Kidami soils, which have a surface layer of silt loam that is low in organic matter content. Generally, the structure of these soils is weak, and a crust forms on the surface during periods of intense rainfall. This crust is hard when dry. It inhibits seedling emergence, reduces the infiltration rate, and increases runoff and erosion. Regular additions of crop residue,

manure, and other organic material improve soil structure and minimize crusting.

Poor tilth is also a problem on soils that have a surface layer of silty clay loam or clay loam. If poorly drained soils, such as Ashkum and Pella soils, are plowed when wet, the surface layer becomes cloddy. The cloddiness hinders the preparation of a good seedbed. Tilling in the fall and leaving the soil surface rough with moderate amounts of crop residue generally result in good tilth in the spring. A system of strip or ridge tillage may also work well in areas of these soils.

Restricted permeability can increase the susceptibility of a soil to erosion. As water movement slows within a soil, the chance for runoff increases. The slowly permeable Ozaukee soils have a higher potential for erosion than the moderately slowly permeable Kidami soils. The restricted permeability can be overcome by using a cropping system that leaves crop residue on the surface after planting, incorporating green manure crops or crop residue into the soil, and using conservation cropping systems.

Restricted permeability can also limit the effectiveness of drainage systems. In areas of the slowly permeable Ashkum soils, a narrower tile spacing is needed for effectively lowering the water table than in areas of the moderately permeable Pella soils.

A low available water capacity limits the productivity of some soils used for crops in the county. Casco and Lorenzo soils are examples. The physical composition of these soils limits the amount of water available for optimum plant growth. The effects of droughtiness in areas of these soils can be minimized by reducing the amount of runoff and increasing the water-holding capacity of the soil. Using a conservation tillage system and returning crop residue and other organic material to the soil help to overcome droughtiness. Also, irrigation helps to overcome droughtiness.

In McHenry County, hay is a very important crop for dairy and beef producers and for people who own small acreages and raise horses for recreational purposes. The horse-racing industry in the Chicago metropolitan area provides an additional market for hay. There are very few permanent hay fields in the county, and a vast majority of producers rotate their hay seeding with 1 to several years of row crops, such as corn and soybeans.

Proper management is needed on hayland to prolong the life of desirable forage species, to maintain or improve the quality and quantity of forage, and to control erosion and reduce runoff. Hay may last as a vigorous crop for 4 or 5 years, depending on management and on the varieties seeded. Suitable hay plants include several legumes and cool-season grasses. Alfalfa is the most commonly grown legume for hay. It is often used in mixtures with smooth bromegrass and orchardgrass. Alfalfa is best suited to well drained soils, such as Caprell and Piscasaw soils. Red clover is also grown for hay. Measures that maintain or improve fertility are needed. The amount of lime and fertilizer to be added should be based on the results of soil tests, the needs of the plants, and the expected level of yields. Seed varieties should be selected in accordance with the soil properties and the drainage conditions of the tract of land.

Cropland Limitations and Hazards

The management concerns affecting the use of the detailed soil map units in the survey area for crops are shown in table 6. The main concerns in managing cropland are controlling water erosion, soil wetness, and ponding; minimizing surface crusting; improving poor tilth; and limiting the effects of excessive permeability, restricted permeability, and low available water capacity.

Generally, a combination of several practices is needed to control water erosion. Conservation tillage, stripcropping, contour farming, conservation cropping systems, crop residue management, diversions, and grassed waterways help to prevent excessive soil loss.

Wetness is a limitation in some cropland areas, and ponding is a hazard. Drainage systems consist of subsurface tile drains, surface inlet tile, open drainage ditches, or a combination of these. Measures that maintain the drainage system are needed.

Practices that minimize surface crusting and improve poor tilth include incorporating green manure crops, manure, or crop residue into the soil and using a system of conservation tillage. Surface cloddiness can be controlled by avoiding tillage when the soil is too wet.

Excessive permeability in a soil can cause deep leaching of nutrients and pesticides. Selecting appropriate chemicals and using split application methods reduce the hazard of ground-water contamination.

Restricted permeability in a soil can be overcome by incorporating green manure crops, manure, or crop residue into the soil; applying a system of conservation tillage; and using a conservation cropping system.

Measures that conserve moisture are needed in areas where the soils have a low available water capacity. Conserving moisture involves reducing the evaporation and runoff rates and increasing the rate of

water infiltration. Applying conservation tillage and conservation cropping systems, farming on the contour, stripcropping, establishing field windbreaks, and leaving crop residue on the surface conserve moisture.

Some of the limitations and hazards shown in the table cannot be easily overcome. These are flooding, depth to bedrock, and subsidence.

Additional limitations and hazards are as follows:

Excessive lime.—This limitation can be overcome by incorporating green manure crops, manure, or crop residue into the soil; applying a system of conservation tillage; and using conservation cropping systems. Also, crops may respond well to additions of phosphate fertilizer on soils that have a high content of lime.

Depth to bedrock.—Rooting depth and available moisture may be limited by bedrock within a depth of 30 inches.

Flooding.—Winter small grain crops can be damaged. Tilling and planting should be delayed in the spring until flooding is no longer a hazard.

Gravelly surface layer.—This limitation causes rapid wear of tillage equipment. It cannot be easily overcome.

Subsidence.—Subsidence occurs as a result of shrinkage from drying, consolidation because of the loss of ground water, compaction from tillage, wind erosion, burning, and biochemical oxidation. Limiting the amount of drainage, avoiding excessive tillage, deferring tillage when the soil is wet, and using a system of conservation tillage that leaves crop residue on the surface after planting help to control subsidence.

Wind erosion.—Using a system of conservation tillage that leaves crop residue on the surface after planting and keeping the surface rough help to control wind erosion.

Explanation of Criteria

Crusting.—The average content of organic matter in the surface layer is less than 2.5 percent, and the clay content is greater than 20 percent.

Depth to bedrock.—Bedrock is within a depth of 30 inches.

Excessive lime.—The calcium carbonate equivalent is 15 percent or more and meets the calcic horizon classification criteria.

Excessive permeability.—The upper limit of the permeability range is 6 inches or more within the soil profile.

Flooding.—The component of the map unit is occasionally flooded or frequently flooded.

Gravelly surface layer.—The content of gravel in the surface layer is greater than 15 percent.

Low available water capacity.—The weighted average of the available water capacity between the surface and a depth of 40 inches is 0.1 inch or less.

Ponding.—A water table is above the surface.

Poor tilth.—The component of the map unit has 27 percent or more clay in the surface layer.

Restricted permeability.—Permeability is less than 0.2 inch per hour between the surface and a depth of 40 inches.

Subsidence.—The decrease in surface elevation is more than 0 inches.

Water erosion.—The surface K factor multiplied by the slope is greater than 0.8, and the slope is 3 percent or more.

Wetness.—The component of the map unit has a water table within a depth of 1.5 feet.

Wind erosion.—The wind erodibility group (WEG) is 1 or 2.

Crop Yield Estimates

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 7. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. The land capability classification of map units in the survey area also is shown in the table.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents (Fehrenbacher and others, 1978). Available yield data from nearby counties and results of field trials and demonstrations also are considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage; erosion control; protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The relative productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in the table are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Pasture and Hayland Interpretations

Under good management, proper grazing is essential for the production of high-quality forage, stand survival, and erosion control. Proper grazing helps plants to maintain sufficient and generally vigorous top growth during the growing season. Brush control is essential in many areas, and weed control generally is needed. Rotation grazing and renovation also are important management practices.

Yield estimates are often provided in animal unit months (AUM), or the amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about forage yields other than those shown in table 7.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not take into account major and generally expensive landshaping that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for forestland or for engineering purposes.

In the capability system, soils generally are grouped at three levels—capability class, subclass, and unit (USDA, 1961). These categories indicate the degree and kinds of limitations affecting mechanized farming systems that produce the more commonly grown field crops, such as corn, soybeans, small grain, and hay. Only class and subclass are used in this survey.

Capability classes, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use.

If properly managed, soils in classes I, II, III, and IV are suitable for the mechanized production of commonly grown field crops and for pasture and forestland. The degree of the soil limitations affecting the production of cultivated crops increases progressively from class I to class IV. The limitations can affect levels of production and the risk of permanent soil deterioration caused by erosion and other factors.

Soils in classes V, VI, and VII are generally not suited to the mechanized production of commonly grown field crops without special management, but they are suitable for plants that provide a permanent cover, such as grasses and trees. The severity of the soil limitations affecting crops increases progressively from class V to class VII. The local office of the Cooperative Extension Service or the Natural Resources Conservation Service can provide guidance on the use of these soils as cropland.

Areas in class VIII are generally not suitable for crops, pasture, or forestland without a level of management that is impractical. These areas may have potential for other uses, such as recreational facilities and wildlife habitat.

Capability subclasses identify the dominant kind of limitation in the class. They are designated by adding a small letter, ***e, w, s,*** or ***c,*** to the class numeral, for example, IIe. The letter ***e*** shows that the main hazard is the risk of erosion unless a close-growing plant cover is maintained; ***w*** shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); ***s*** shows that the soil is limited mainly because it is shallow, droughty, or stony; and ***c,*** used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

There are no subclasses in class I because the soils of this class have few limitations. Class V contains only the subclasses indicated by ***w, s,*** or ***c*** because the soils in class V are subject to little or no erosion. They have other limitations that restrict their use mainly to pasture, forestland, wildlife habitat, or recreation.

The capability classification of map units in the survey area is given in table 7.

Pasture Limitations and Hazards

Growing legumes, cool-season grasses, and warm-season grasses that are suited to the soils and the climate of the area helps to maintain a productive stand of pasture.

The management concerns affecting the use of the soils in the survey area for pasture are shown in table 8. The major management concerns affecting pasture are ***water erosion, low pH, equipment limitations, low fertility, a gravelly surface layer,*** and ***low available water capacity.***

Pastureland soils that are susceptible to water erosion meet the following criteria: The value of K factor multiplied by the slope is greater than 0.8, and the slope is equal to or greater than 3 percent.

Water erosion reduces the productivity of pastureland. It also results in onsite and offsite sedimentation, causes water pollution by sedimentation, and increases the runoff of livestock manure and other added nutrients.

Measures that are effective in controlling water erosion include establishing or renovating stands of legumes and grasses. Controlling erosion during seedbed preparation is a major concern. If the soil is tilled for the reseeding of pasture or hay crops, planting winter cover crops, establishing grassed waterways, farming on the contour, and using a system of conservation tillage that leaves a protective cover of crop residue on the surface can help to minimize erosion.

Overgrazing or grazing when the soil is wet reduces the extent of plant cover and results in surface compaction and poor tilth, and thus it increases the susceptibility to erosion. Proper stocking rates, rotation grazing, and timely deferment of grazing, especially during wet periods, help to keep the pasture in good condition. The proper location of livestock watering facilities helps to prevent surface compaction or the formation of ruts by making it unnecessary for cattle to travel long distances up and down the steep slopes.

Soils that have low pH, or low reaction, have a pH value equal to or less than 5.5 in the surface layer.

Low soil reaction inhibits the uptake of certain nutrients by the plants or accelerates the absorption of certain other elements to the level of toxic concentrations. Either of these conditions affects the health and vigor of plants. Applications of lime should be based on the results of soil tests. The goal is to achieve the optimum pH level for the uptake of the major nutrients by the specific grass, legume, or combination of grasses and legumes.

Soils that have low fertility meet the following criteria: The average content of organic matter in the surface layer is less than 1 percent, and the cation-exchange capacity is equal to or less than 7 milliequivalents per 100 grams of soil.

In areas where slopes are 10 percent or more, the operation of farm equipment may be restricted.

Low fertility levels affect the health and vigor of the plants and thus have direct impact on the quantity and quality of livestock produced. Additions of fertilizers and other organic material should be based on the results of soil tests, on the needs of specific plant species, and on the desired level of production.

In areas where the soils have more than 15 percent gravel in the surface layer, seedbed preparation and renovation practices may be hindered. The cobbles and stones can be removed or piled in a corner of the field.

Available water capacity is low when it is a weighted average of less than 0.10 inch of water per inch of soil within a depth of 40 inches or when it is a weighted average of less than 3 inches in the root zone if the root zone is less than 40 inches thick. Available water capacity refers to the capacity of soils to hold water available for use by most plants. The quality and quantity of the pasture may be reduced if the available water is inadequate for the maintenance of a healthy community of desired pasture species and, thus, the desired number of livestock. A poor quality pasture may increase the hazard of erosion and increase the runoff of pollutants. Planting drought-resistant species of grasses and legumes helps to establish a cover of vegetation. Irrigation may be needed.

Prime Farmland and Other Important Farmland

Prime farmland is of major importance in meeting the Nation's short- and long-range needs for food and fiber. The acreage of high-quality farmland is limited, and the U.S. Department of Agriculture recognizes that government at local, state, and Federal levels, as well as individuals, must encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland soils, as defined by the U.S. Department of Agriculture, are soils that are best suited to food, feed, forage, fiber, and oilseed crops. Such soils have properties that favor the economic production of sustained high yields of crops. The soils need only to be treated and managed by acceptable farming methods. An adequate moisture supply and a sufficiently long growing season are required. Prime farmland soils produce the highest yields with minimal expenditure of energy and economic resources, and farming these soils results in the least damage to the environment.

Prime farmland soils may presently be used as cropland, pasture, or forestland or for other purposes. They either are used for food and fiber or are available

for these uses. Urban or built-up land, public land, and water areas cannot be considered prime farmland. Urban or built-up land is any contiguous unit of land 10 acres or more in size that is used for such purposes as housing, industrial, and commercial sites, sites for institutions or public buildings, small parks, golf courses, cemeteries, railroad yards, airports, sanitary landfills, sewage treatment plants, and water-control structures. Public land is land not available for farming in National forests, National parks, military reservations, and state parks.

Prime farmland soils commonly receive an adequate and dependable supply of moisture from precipitation or irrigation. The temperature and growing season are favorable, and the level of acidity or alkalinity and the content of salts and sodium are acceptable. The soils have few, if any, rocks and are permeable to water and air. They are not excessively erodible or saturated with water for long periods, and they are not frequently flooded during the growing season or are protected from flooding. Slopes range mainly from 0 to 6 percent.

Soils that have a high water table, are subject to flooding, or are droughty may qualify as prime farmland where these limitations are overcome by drainage measures, flood control, or irrigation. Onsite evaluation is necessary to determine the effectiveness of corrective measures. More information about the criteria for prime farmland can be obtained at the local office of the Natural Resources Conservation Service.

A recent trend in land use has been the conversion of prime farmland to urban and industrial uses. The loss of prime farmland to other uses puts pressure on lands that are less productive than prime farmland.

About 264,000 acres, or nearly 66 percent of the survey area, meets the criteria for prime farmland. Areas of this land are throughout the county.

The map units in the survey area that meet the criteria for prime farmland are listed in table 9. This list does not constitute a recommendation for a particular land use. On some soils included in the table, measures that overcome limitations are needed. The need for these measures is indicated in parentheses after the map unit name. The location of each map unit is shown on the detailed soil maps. The soil qualities that affect use and management are described in the section “Soil Series and Detailed Soil Map Units” in Part I of this survey.

Unique farmland is land other than prime farmland that is used for the production of specific high-value food and fiber crops. It has the special combination of soil qualities, location, growing season, and moisture supply needed for the economic production of sustained high yields of a specific high-quality crop when treated and managed by acceptable farming methods. Examples of such crops are citrus, tree nuts, olives, cranberries, and vegetables.

Unique farmland is used for a specific high-value food or fiber crop; has an adequate supply of available moisture for the specific crop because of stored moisture, precipitation, or irrigation; and has a combination of soil qualities, growing season, temperature, humidity, air drainage, elevation, aspect, and other factors, such as nearness to markets, that favors the production of a specific food or fiber crop.

Lists of unique farmland are developed as needed in cooperation with conservation districts and others.

Additional farmland of statewide importance is land other than prime farmland and unique farmland that is of statewide importance in the production of food, feed, fiber, forage, and oilseed crops. The criteria used in defining and delineating areas of farmland of statewide importance are determined by the appropriate state agency or agencies. Generally, additional farmland of statewide importance includes areas that nearly meet the criteria for prime farmland and that economically produce high yields of crops when treated and managed by acceptable farming methods. Some areas can produce as high a yield as areas of prime farmland if conditions are favorable. In some states, additional farmland of statewide importance may include tracts of land that have been designated for agriculture by state law.

Additional farmland of local importance consists of areas that are of local importance in the production of food, feed, fiber, forage, and oilseed crops and are not identified as having national or statewide importance. Where appropriate, this land is identified by local agencies. It may include tracts of land that have been designated for agriculture by local ordinance.

Lists of this land are developed as needed in cooperation with conservation districts and others.

Erosion Factors

Soil erodibility (K) and soil-loss tolerance (T) factors are used in an equation that predicts the amount of soil lost through water erosion in areas of cropland. The procedure for predicting soil loss is useful in guiding the selection of soil and water conservation practices. The erosion factors for the soils in the survey area are listed in table 19.

Soil Erodibility (K) Factor

The soil erodibility (K) factor indicates the susceptibility of a soil to sheet and rill erosion by water. The soil properties that influence erodibility are

those that affect the infiltration rate, the movement of water through the soil, and the water storage capacity of the soil and those that allow the soil to resist dispersion, splashing, abrasion, and the transporting forces of rainfall and runoff. The most important soil properties are the content of silt plus very fine sand, the content of sand coarser than very fine sand, the content of organic matter, soil structure, and permeability.

Fragment-Free Soil Erodibility (Kf) Factor

This is one of the factors used in the Revised Universal Soil Loss Equation. It shows the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Soil-Loss Tolerance (T) Factor

The soil-loss tolerance (T) factor is an estimate of the maximum annual rate of soil erosion that can occur over a sustained period without affecting crop productivity. The rate is expressed in tons of soil loss per acre per year. Ratings of 1 to 5 are used, depending on soil properties and prior erosion. The criteria used in assigning a T factor to a soil include maintenance of an adequate rooting depth for crop production, potential reduction of crop yields, maintenance of water-control structures affected by sedimentation, prevention of gullying, and the value of nutrients lost through erosion.

Wind Erodibility Groups

Wind erodibility is directly related to the percentage of dry, nonerodible surface soil aggregates larger than 0.84 millimeter in diameter. From this percentage, the wind erodibility index (I) factor is determined. This factor is an expression of the stability of the soil aggregates, or the extent to which they are broken down by tillage and the abrasion caused by windblown soil particles. Soils are assigned to wind erodibility groups (WEG) having similar percentages of dry soil aggregates larger than 0.84 millimeter. The wind erodibility groups and wind erodibility index numbers of the soils in the survey area are listed in table 19.

Additional information about wind erodibility groups and K, Kf, T, and I factors can be obtained from local offices of the Natural Resources Conservation Service or the Cooperative Extension Service.

Hydric Soils

In this section, hydric soils are defined and described and the hydric soils in the survey area are listed.

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others, 1979; U.S. Army Corps of Engineers, 1987; National Research Council, 1995; Tiner, 1985). Criteria for each of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). These soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 1995). These criteria are used to identify a phase of a soil series that normally is associated with wetlands. The criteria used are selected estimated soil properties that are described in “Soil Taxonomy” (Soil Survey Staff, 1999) and “Keys to Soil Taxonomy” (Soil Survey Staff, 1998) and in the “Soil Survey Manual” (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils in this survey area are specified in “Field Indicators of Hydric Soils in the United States” (Hurt and others, 1998).

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always

recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

The following map units meet the definition of hydric soils and, in addition, have at least one of the hydric soil indicators. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council, 1995; Hurt and others, 1998).

67A Harpster silty clay loam, 0 to 2 percent slopes
100A Palms muck, 0 to 2 percent slopes
103A Houghton muck, 0 to 2 percent slopes
152A Drummer silty clay loam, 0 to 2 percent slopes
153A Pella silty clay loam, 0 to 2 percent slopes
153A+ Pella silt loam, 0 to 2 percent slopes, overwash
206A Thorp silt loam, 0 to 2 percent slopes
210A Lena muck, 0 to 2 percent slopes
232A Ashkum silty clay loam, 0 to 2 percent slopes
329A Will loam, 0 to 2 percent slopes
330A Peotone silty clay loam, 0 to 2 percent slopes
488A Hooppole loam, 0 to 2 percent slopes
523A Dunham silty clay loam, 0 to 2 percent slopes
529A Selmass loam, 0 to 2 percent slopes
626A Kish loam, 0 to 2 percent slopes
1067A Harpster silt loam, 0 to 2 percent slopes, undrained
1082A Millington silt loam, 0 to 2 percent slopes, undrained, occasionally flooded
1100A Palms muck, 0 to 2 percent slopes, undrained
1103A Houghton muck, 0 to 2 percent slopes, undrained
1153A Pella silty clay loam, 0 to 2 percent slopes, undrained
1206A Thorp silt loam, 0 to 2 percent slopes, undrained
1210A Lena muck, 0 to 2 percent slopes, undrained
1330A Peotone silty clay loam, 0 to 2 percent slopes, undrained
1488A Hooppole loam, 0 to 2 percent slopes, undrained
1529A Selmass loam, 0 to 2 percent slopes, undrained
1626A Kish loam, 0 to 2 percent slopes, undrained
1776A Comfrey loam, 0 to 2 percent slopes, undrained, occasionally flooded
4103A Houghton muck, 0 to 2 percent slopes, ponded
8082A Millington silt loam, 0 to 2 percent slopes, occasionally flooded
8776A Comfrey loam, 0 to 2 percent slopes, occasionally flooded

Map units that are made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

Windbreaks and Environmental Plantings

Windbreaks protect livestock, buildings, and yards from wind and snow. They also protect fruit trees and gardens, and they furnish habitat for wildlife. Several rows of low- and high-growing broadleaf and coniferous trees and shrubs provide the most protection.

Field windbreaks are narrow plantings made at right angles to the prevailing wind and at specific intervals across the field. The interval depends on the erodibility of the soil. Field windbreaks protect cropland and crops from wind, help to keep snow on the fields, and provide food and cover for wildlife.

Environmental plantings help to beautify and screen houses and other buildings and to abate noise. The plants, mostly evergreen shrubs and trees, are closely spaced. To ensure plant survival, a healthy planting stock of suitable species should be planted properly on a well prepared site and maintained in good condition.

Windbreaks are often planted on land that did not originally support trees. Knowledge of how trees perform on such land can be gained only by observing and recording the performance of trees that have been planted and have survived. Many popular windbreak species are not indigenous to the areas in which they are planted.

Each tree or shrub species has certain climatic and physiographic limits. Within these parameters, a tree or shrub may grow well or grow poorly, depending on the characteristics of the soil. Each tree or shrub has definable potential heights in a given physiographic area and under a given climate. Accurate definitions of potential heights are necessary when a windbreak is planned and designed.

Table 10 shows the height that locally grown trees and shrubs are expected to reach in 20 years on

various soils. The estimates in this table are based on measurements and observation of established plantings that have been given adequate care. They can be used as a guide in planning windbreaks and screens. Additional information on planning windbreaks and screens and planting and caring for trees and shrubs can be obtained from local offices of the Natural Resources Conservation Service or the Cooperative Extension Service or from a nursery.

Forestland

Paul M. Deizman, district forester, Illinois Department of Conservation, helped prepare this section.

Forest once covered nearly 45 percent of the land in the survey area. Little of the pre-settlement forestland has been untouched or properly managed. Presently, McHenry County has 21,000 acres of forest. This acreage represents 5.2 percent of the total land area in the county. About 8,000 additional acres, representing another 2 percent of the total acreage, is considered tree-covered land or brushland.

Over the past century new forests have been created only by natural succession of fallow upland and bottom-land areas, by abandonment of low-yielding cropland, and by seeding or planting of seedlings. Only 10 percent of the present forestland is under proper timber management. Areas of grazed forestlands are slowly recovering, but many decades or a full forest generation may be needed before these areas can become productive without management. As demographics change within the county and as time passes, these same forestation realities will continue to be significant.

Principal forest cover types in McHenry County include oak-hickory (10,000 acres), maple-beech (7,000 acres), elm-ash-soft maple (3,000 acres), and cottonwood (1,000 acres). Among these principal forest types and other minor cover associations, at least 77 different tree taxa and 89 shrub taxa occur in McHenry County.

McHenry County has three sawmills. Although the number of sawmills has been gradually declining, the sawmills in and around the county borders adequately serve the local demands for custom sawing. Today's hardwood timber markets are globally oriented and allow any owner with quality forest products reasonable access to commercial markets through interested buyers, forest operators, state foresters, and forestry consultants in this part of the midwest. The demand for standing timber from McHenry County remains high. At last count, 59 firms employing nearly 12,000 individuals manufacture or wholesale wood products and paper products in McHenry County.

McHenry County has tremendous potential for establishing additional productive forestland. The highly erodible land (HEL) classification includes nearly 37,000 acres that would be well suited to hardwood forest. Forestry in McHenry County is not only potentially profitable but serves to protect and enhance watershed quality, recreation areas, and wildlife habitat. Interest in forest management and establishment in the county is very high. The average forest holding per landowner is 15.5 acres. Even parcels as small as 5 acres can be effectively managed for both timber production and multi-resource conservation.

Assistance in establishing, improving, or managing forestland is available from foresters or specialists in natural resources.

Table 11 can help woodland owners or forest managers plan the use of soils for wood crops. Only those soils suitable for wood crops are listed. The table lists the ordination symbol for each soil. Soils assigned the same ordination symbol require the same general management and have about the same potential productivity.

The first part of the ***ordination symbol***, a number, indicates the potential productivity of the soils for an indicator tree species. The number indicates the volume, in cubic meters per hectare per year, which the indicator species can produce in a pure stand under natural conditions. The number 1 indicates low potential productivity; 2 or 3, moderate; 4 or 5, moderately high; 6 to 8, high; 9 to 11, very high; and 12 to 39, extremely high. The second part of the symbol, a letter, indicates the major kind of soil limitation. The letter ***R*** indicates steep slopes; ***X***, stoniness or rockiness; ***W***, excess water in or on the soil; ***T***, toxic substances in the soil; ***D***, restricted rooting depth; ***C***, clay in the upper part of the soil; ***S***, sandy texture; ***F***, a high content of rock fragments in the soil; ***L***, low strength; and ***N***, snowpack. The letter ***A*** indicates that limitations or restrictions are insignificant. If a soil has more than one limitation, the priority is as follows: R, X, W, T, D, C, S, F, L, and N.

In table 11, ***slight, moderate,*** and ***severe*** indicate the degree of the major soil limitations to be considered in management.

Erosion hazard is the probability that damage will

occur as a result of site preparation and cutting where the soil is exposed along roads, skid trails, and fire lanes and in log-handling areas. Forests that have been burned or overgrazed also are subject to erosion. Ratings of the erosion hazard are based on the percent of the slope. A rating of ***slight*** indicates that no particular prevention measures are needed under ordinary conditions. A rating of ***moderate*** indicates that erosion-control measures are needed in certain silvicultural activities. A rating of ***severe*** indicates that special precautions are needed to control erosion in most silvicultural activities.

Equipment limitation reflects the characteristics and conditions of the soil that restrict use of the equipment generally needed in woodland management or harvesting. The chief characteristics and conditions considered in the ratings are slope, stones on the surface, rock outcrops, soil wetness, and texture of the surface layer. A rating of ***slight*** indicates that under normal conditions the kind of equipment and season of use are not significantly restricted by soil factors. Soil wetness can restrict equipment use, but the wet period does not exceed 1 month. A rating of ***moderate*** indicates that equipment use is moderately restricted because of one or more soil factors. If the soil is wet, the wetness restricts equipment use for a period of 1 to 3 months. A rating of ***severe*** indicates that equipment use is severely restricted either as to the kind of equipment that can be used or the season of use. If the soil is wet, the wetness restricts equipment use for more than 3 months.

Seedling mortality refers to the death of naturally occurring or planted tree seedlings, as influenced by the kinds of soil, soil wetness, or topographic conditions. The factors used in rating the soils for seedling mortality are texture of the surface layer, depth to a seasonal high water table and the length of the period when the water table is high, rock fragments in the surface layer, effective rooting depth, and slope aspect. A rating of ***slight*** indicates that seedling mortality is not likely to be a problem under normal conditions. Expected mortality is less than 25 percent. A rating of ***moderate*** indicates that some problems from seedling mortality can be expected. Extra precautions are advisable. Expected mortality is 25 to 50 percent. A rating of ***severe*** indicates that seedling mortality is a serious problem. Extra precautions are important. Replanting may be necessary. Expected mortality is more than 50 percent.

Windthrow hazard is the likelihood that trees will be uprooted by the wind because the soil is not deep enough for adequate root anchorage. The main restrictions that affect rooting are a seasonal high water table and the depth to bedrock, a fragipan, or other limiting layers. A rating of ***slight*** indicates that under normal conditions no trees are blown down by the wind. Strong winds may damage trees, but they do not uproot them. A rating of ***moderate*** indicates that some trees can be blown down during periods when the soil is wet and winds are moderate or strong. A rating of ***severe*** indicates that many trees can be blown down during these periods.

Plant competition ratings indicate the degree to which undesirable species are expected to invade and grow when openings are made in the tree canopy. The main factors that affect plant competition are depth to the water table and the available water capacity. A rating of ***slight*** indicates that competition from undesirable plants is not likely to prevent natural regeneration or suppress the more desirable species. Planted seedlings can become established without undue competition. A rating of ***moderate*** indicates that competition may delay the establishment of desirable species. Competition may hamper stand development, but it will not prevent the eventual development of fully stocked stands. A rating of ***severe*** indicates that competition can be expected to prevent regeneration unless precautionary measures are applied.

The ***potential productivity*** of merchantable or ***common trees*** on a soil is expressed as a ***site index*** and as a ***productivity class***. The site index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

The ***productivity class***, a number, is the yield likely to be produced by the most important trees. This number, expressed as cubic meters per hectare per year, indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

The first species listed under ***common trees*** for a soil is the indicator species for that soil. It generally is the most common species on the soil and is the one that determines the ordination class.

Suggested trees to plant are those that are suitable for commercial wood production.

Recreation

McHenry County offers a wide variety of recreational facilities, including state parks and county-owned conservation areas. The two state parks, Moraine Hills and Chain O'Lakes, provide an assortment of outdoor activities, including boating, fishing, hiking, biking, horseback riding, camping, picnicking, and cross-country skiing. County-owned conservation areas also offer camping, picnicking, hiking, biking, horseback riding, and cross-country skiing. Also, most municipalities offer a variety of recreational facilities and activities.

The Fox River, in the eastern part of the county, and the many lakes in the region also provide opportunities for boating, fishing, and water-skiing.

The soils of the survey area are rated in table 12 according to limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation also are important. Soils that are subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 12, the degree of soil limitation is expressed as slight, moderate, or severe. ***Slight*** means that soil properties are generally favorable and that limitations are minor and easily overcome. ***Moderate*** means that limitations can be overcome or alleviated by planning, design, or special maintenance. ***Severe*** means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or a combination of these.

The information in table 12 can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 15 and interpretations for dwellings without basements and for local roads and streets in table 14.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have mild slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes or stones or boulders that increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones and boulders, is firm after rains, and is not dusty when dry. If grading is needed, the depth of the soil over bedrock or a hardpan should be considered.

Paths and trails for hiking and horseback riding should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use. They have moderate slopes and few or no stones or boulders on the surface.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes and no stones or boulders on the surface. The suitability of the soil for tees or greens is not considered in rating the soils.

Wildlife Habitat

McHenry County's diverse topography, which is primarily the result of glacial action, provides a variety of aquatic and upland habitats that support an abundance of wildlife species. Characteristic aquatic habitats include small lakes, numerous streams, and wetlands. Typical wetland types include lakeside marshes, glacial potholes or kettle marshes, fens, hillside seeps, and flood-plain wetlands along streams and rivers. These wetland areas provide important stormwater storage and water quality benefits to the county, and they provide homes to ducks, geese, great blue herons, sandhill cranes, muskrat, mink, beaver, and numerous frogs, toads, and turtles (fig. 4).

The upland areas, which range from steep to gently sloping hillsides and ridges to nearly level glacial lake beds and outwash plains, were once covered by a sea of native prairie grasses and small open oak forestlands known as savannahs. These natural communities were home to such species as buffalo, elk, prairie chickens, and wolves. As the county was settled, conversion of land for agriculture and urbanization altered these natural communities and the associated wildlife populations. McHenry County's landscape is now a mosaic of urban development, cropland, pasture, small woodlots, and wetlands and other waterways that support wildlife species that have adapted to the human-altered landscape. These species include whitetail deer, mallards, pheasants, squirrels, crows, cardinals, house sparrows, raccoon, fox, and coyotes.

In general, most of the county is not managed primarily for wildlife. Good land management practices, however, can also improve the value of an area for wildlife. For example, farm practices that leave crop residue on the fields during fall and winter not only help to control erosion but also provide winter cover and food for some wildlife species. Allowing grassed waterways, road ditches, fencelines, set-aside fields, and vacant properties to remain unmowed until early August provides much-needed habitat for ground-nesting wildlife, such as rabbits, pheasants, and many species of songbirds.

Many temporarily and seasonally flooded wetlands have been impacted by land use practices. Development and cultivation in these wetlands should be avoided. Buffer strips surrounding wetland areas provide food and nesting cover for many wildlife species and prevent these areas from filling in with eroded sediment. Wetlands, streambanks, and woodlots should be fenced so that livestock are excluded. Fencing protects and maintains the native plant communities that support wildlife species, helps to control erosion, and improves water quality in streams and rivers.

Figure 4.—The wetland area in the foreground provides suitable habitat for geese and other wildlife.

When an area is being restored or managed for wildlife habitat, knowledge of the soils on the site is important. For example, poorly drained and very poorly drained soils have a seasonal high water table

and are most likely to support vegetation that is tolerant of wet conditions. This kind of vegetation is likely to attract wetland wildlife species. In some areas, poorly drained and very poorly drained soils have been drained by subsurface tile drains or drainage ditches. Such areas offer opportunities for the restoration of wetland habitat, provided that negative impacts on neighboring properties can be avoided.

Upland soils support plant communities that were once dominated by prairie grass and oak savannah habitats. These habitats can also be restored by applying management practices that promote or reestablish the native plant species while controlling or eliminating competing exotic vegetation.

Assistance with wildlife habitat projects is available from various local, state, and Federal agencies, including the Illinois Department of Conservation, the U.S. Fish and Wildlife Service, the Natural Resources Conservation Service, and the local Soil and Water Conservation District.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In table 13, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of ***good*** indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of ***fair*** indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of ***poor*** indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of ***very poor*** indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flooding. Soil temperature and soil moisture also are considerations. Examples of grain and seed crops are wheat, rye, oats, and barley.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flooding, and slope. Soil temperature and soil moisture also are considerations. Examples of grasses and legumes are bromegrass, timothy, orchardgrass, clover, alfalfa, and trefoil.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flooding. Soil temperature and soil moisture also are considerations. Examples of wild herbaceous plants are bluestem, indiangrass, blueberry, goldenrod, lambsquarters, dandelions, blackberry, ragweed, wheatgrass, and nightshade.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of these plants are oak, poplar, boxelder, birch, maple, green ash, willow, and American elm. Examples of fruit-producing shrubs that are suitable for planting on soils rated ***good*** are hawthorn, honeysuckle, American plum, redosier dogwood, chokecherry, serviceberry, silver buffaloberry, and crabapple.

Coniferous plants furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine, spruce, hemlock, fir, yew, cedar, larch, and juniper.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction,

salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, rushes, sedges, bulrushes, wild rice, arrowhead, waterplantain, pickerelweed, and cattail.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are muskrat marshes, waterfowl feeding areas, wildlife watering developments, beaver ponds, and other wildlife ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. Wildlife attracted to these areas include Hungarian partridge, pheasant, meadowlark, field sparrow, killdeer, cottontail rabbit, and red fox.

Habitat for woodland wildlife consists of areas of deciduous and/or coniferous plants and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, thrushes, woodpeckers, owls, tree squirrels, porcupine, raccoon, and deer.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, herons, bitterns, rails, kingfishers, muskrat, otter, mink, and beaver.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the data in the tables described under the heading "Soil Properties."

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 or 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Building Site Development

Over the last two decades, McHenry County has experienced a significant increase in population. This increase has had an important impact on land use.

Even though agricultural erosion accounts for most of the total eroded sediment, urban erosion is quickly becoming a major factor affecting water quality. It is estimated that the rate of urban erosion and the resulting sediment may be as much as 300 to 400 times the erosion rate in agricultural areas. Urban land under development is commonly stripped and left for several years without adequate erosion control. Soil compaction and massive earth moving are more conducive to erosion than seedbed preparation for crop production.

Urban erosion-control practices utilize essentially the same concepts as those applied to agriculture. The surface of the soil should be protected from the impact of raindrops, and the runoff from accumulated rainwater must be controlled. Effective control of erosion and sediment involves three major elements. First, stabilizing the soil can be accomplished by

maintaining a permanent or temporary vegetative cover, mulching, or using a variety of other practices. Second, conservation practices can be used to control runoff. These practices include installing diversions, grassed waterways or lined swales, storm sewers, or gully-control structures. Third, sediment can be controlled by using sediment basins, sediment traps, or filter fences.

Erosion-control measures are effective alone or in combinations. The measures used and their effectiveness depend on the soil characteristics and topography. Information about the design of erosion-control measures is provided in the Field Office Technical Guide, which is available in local offices of the Natural Resources Conservation Service.

Table 14 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered ***slight*** if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; ***moderate*** if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and ***severe*** if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, or other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock, a cemented pan, or a very firm dense layer; stone content; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and depth to the water table.

Dwellings and ***small commercial buildings*** are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrinking and swelling, and organic layers can cause the movement of footings. A high water table, depth to bedrock or to a cemented pan, large stones, slope, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 or 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or stabilized soil material; and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to bedrock or to a cemented pan, a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, frost action potential, and depth to a high water table affect the traffic-supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, a high water table, depth to bedrock or to a cemented pan, the available water capacity in the upper 40 inches, and the content of salts, sodium, and sulfidic materials affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

Sanitary Facilities

Pat McNulty, McHenry County Health Department, and Robert Oja, certified professional soil scientist, helped prepare this section.

Methods of waste disposal have gradually evolved with changes in technology and with the increasing growth of McHenry County. Electrification and the subsequent ability to easily bring water supplies into homes increased the need for disposal of expanding waste-water volumes. The population boom experienced in the county since the 1940’s and changing lifestyles further expanded waste-water volumes. Onsite waste-water disposal methods became more complex as the population increased. Problems occurred when improper sites were used for disposal of waste-water. These problems, which created threats to the health and well-being of citizens, prompted a need for more control over the type, size, and location of waste-water disposal systems.

The method used for locating suitable septic field sites changed from percolation tests to a more scientific “soil suitability” test in the late 1980’s. Professional soil scientists began investigating proposed septic system sites to determine the potential of the soils for both disposing of and treating waste-water. Another significant change involved the method of platting lots and subdivisions. Previously, subdivisions were platted with little or no regard to soil or site conditions. As a result, many septic systems were installed on sites that could not adequately treat or dispose of waste-water. Now the soils in potential subdivision sites are intensively mapped prior to the actual platting of lots. This procedure allows for each lot to have enough suitable soil for both a primary and backup septic field area and should prevent many of the problems older subdivision areas have experienced.

The 1990 census indicated that there were 28,207 septic systems in McHenry County (U.S. Department of Commerce, 1990). At that time, nearly 43 percent of the homes in the county depended on these onsite waste-water disposal systems. The waste-water disposal systems designed during and after the late 1980’s are expected to last for long periods of time if they are properly maintained. These larger, more sophisticated systems are being installed in many areas where it is unlikely that public sewer systems will ever become available to many rural subdivisions in the future.

Future plans include the provisions for a waste-water disposal plan for the county. This plan will detail how the county will handle individual waste-water disposal systems. It will also address the management and maintenance of traditional and innovative onsite systems. Proper planning will help to ensure the protection of public health and the preservation and improvement of surface-water and ground-water quality.

Table 15 shows the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered ***slight*** if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; ***moderate*** if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and ***severe*** if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

The table also shows the suitability of the soils for use as daily cover for landfill. A rating of ***good*** indicates that soil properties and site features are favorable for the use and good performance and low maintenance can be expected; ***fair*** indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and ***poor*** indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, depth to bedrock or to a cemented pan, and flooding affect absorption of the effluent. Large stones and bedrock or a cemented pan interfere with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water.

The table gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, a high water table, depth to bedrock or to a cemented pan, flooding, large stones, and content of organic matter.

Excessive seepage resulting from rapid permeability in the soil or a water table that is high enough to raise the level of sewage in the lagoon

causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor.

Sanitary landfills are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground-water pollution. Ease of excavation and revegetation should be considered.

The ratings in the table are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock or to a cemented pan, a high water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium affect trench landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to wind erosion.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

Waste Management

Soil properties are important when organic waste is applied as fertilizer and waste-water is applied in irrigated areas. They also are important when the soil is used as a medium for the treatment and disposal of the organic waste and waste-water. Unfavorable soil properties can result in environmental damage.

The use of organic waste and waste-water as production resources results in the conservation of energy and resources and minimizes the problems associated with waste disposal. If disposal is the goal, applying a maximum amount of the organic waste or the waste-water to a minimal area holds costs to a minimum and environmental damage is the main hazard. If reuse is the goal, a minimum amount should be applied to a maximum area and environmental damage is unlikely.

Interpretations developed for waste management may include ratings for manure- and food-processing waste, municipal sewage sludge, use of waste-water for irrigation, and treatment of waste-water by slow rate, overland flow, and rapid infiltration processes.

Specific information regarding waste management is available at the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Construction Materials

Table 16 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated ***good, fair,*** or ***poor*** as a source of roadfill and topsoil. They are rated as a ***probable*** or ***improbable*** source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavation and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed

information about each soil layer. This information can help to determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated ***good*** contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, a low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated ***fair*** are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have a moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones or have a water table at a depth of 1 to 3 feet. Soils rated ***poor*** have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent; are wet; or have a water table at a depth of less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and ***gravel*** are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In table 16, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be sand and gravel.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, bedrock, and toxic material.

Soils rated ***good*** have friable, loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated ***fair*** are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel, stones, or soluble salts, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated ***poor*** are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel, stones, or soluble salts, have slopes of more than 15 percent, or have a seasonal high water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Water Management

Table 17 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed excavated ponds. The limitations are considered ***slight*** if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; ***moderate*** if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and ***severe*** if soil properties or site features are so unfavorable or so difficult to

overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives for each soil the restrictive features that affect drainage, irrigation, terraces and diversions, and grassed waterways.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, to a cemented pan, or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and the potential for frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or to a cemented pan, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, and sulfur. Availability of drainage outlets is not considered in the ratings.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to bedrock or to a cemented pan. The performance of a system is affected by the depth of the root zone, the amount of salts or sodium, and soil reaction.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock or to a cemented pan affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of wind erosion or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock or to a cemented pan affect the construction of grassed waterways. A hazard of wind erosion, low available water capacity, restricted rooting depth, toxic substances such as salts and sodium, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classification, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

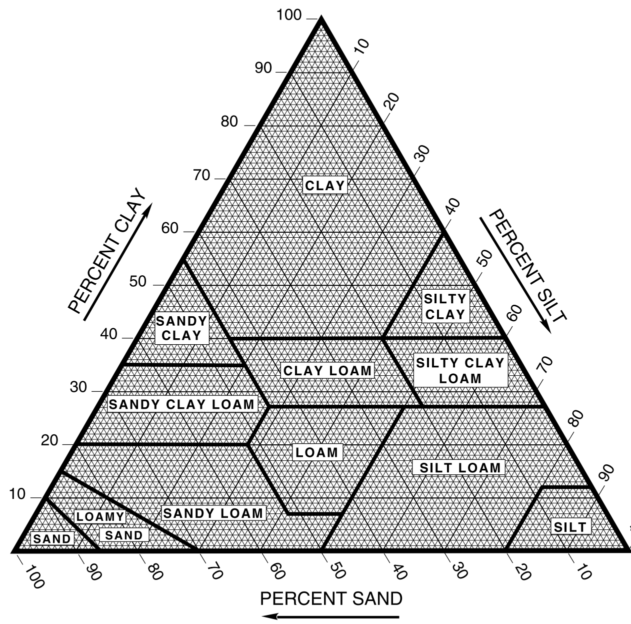


Figure 5.—Percentages of clay, silt, and sand in the basic USDA soil textural classes.

Engineering Index Properties

Table 18 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under the heading “Soil Series and Detailed Soil Map Units” in Part I of this survey.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter (fig. 5). “Loam,” for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as about 15 percent, an appropriate modifier is added, for example, “gravelly.” Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system (ASTM, 2001) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2000).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and ***plasticity index*** (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

Physical and Chemical Properties

Table 19 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In the table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Cation-exchange capacity is the total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. Soils having a low cation-exchange capacity hold fewer cations and may require more frequent applications of fertilizer than soils having a high cation-exchange capacity. Soils having a high cation-exchange capacity can retain cations. The ability to retain cations helps to prevent the pollution of ground water.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Calcium carbonate equivalent is the percent of carbonates, by weight, in the fraction of the soil less than 2 millimeters in size. The availability of plant nutrients is influenced by the amount of carbonates in the soil. Incorporating nitrogen fertilizer into calcareous soils helps to prevent nitrite accumulation and ammonium-N volatilization.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at $^{1}/_{3}$-bar moisture tension. Weight is determined after the soil is dried at 105 degrees C. In table 19, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a

soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of downward movement of water when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each major soil layer. The capacity varies, depending on soil properties that affect retention of water and depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on the basis of measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The classes are ***low***, a change of less than 3 percent; ***moderate***, 3 to 6 percent; ***high***, 6 to 9 percent; and ***very high***, greater than 9 percent.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 19, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.02 to 0.64. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their resistance to wind erosion in cultivated areas. The groups indicate the susceptibility of soil to wind erosion. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are as follows:

1. Coarse sands, sands, fine sands, and very fine sands.

2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, ash material, and sapric soil material.

3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams.

4L. Calcareous loams, silt loams, clay loams, and silty clay loams.

4. Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay.

5. Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material.

6. Noncalcareous loams and silt loams that are more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay.

7. Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material.

8. Soils that are not subject to wind erosion because of coarse fragments on the surface or because of surface wetness.

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Water Features

Table 20 gives estimates of various water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas.

Flooding, the temporary inundation of an area, is caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

The table gives the frequency and duration of flooding and the time of year when flooding is most likely.

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, occasional, and frequent. ***None*** means that flooding is not probable; ***rare*** that it is unlikely but possible under unusual weather conditions (the chance of flooding is nearly 0 percent to 5 percent in any year); ***occasional*** that it occurs, on the average, once or less in 2 years (the chance of flooding is 5 to 50 percent in any year); and ***frequent*** that it occurs, on the average, more than once in 2 years (the chance of flooding is more than 50 percent in any year). Duration is expressed as ***very brief*** if less than 2 days, ***brief*** if 2 to 7 days, ***long*** if 7 days to 1 month, and ***very long*** if more than 1 month. Probable dates are expressed in months. About two-thirds to three-fourths of all flooding occurs during the stated period.

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The estimates are based mainly on observations of the water table at selected sites and on the evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. Indicated in the table are depth to the seasonal high water table, the kind of water table, and the months of the year that the water table commonly is high. A water table that is seasonally high for less than 1 month is not indicated in the table.

An ***apparent*** water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. A ***perched*** water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Two numbers in the column showing depth to the water table indicate the normal range in depth to a

saturated zone. Depth is given to the nearest half foot. The first numeral in the range indicates the highest water level. “More than 6.0” indicates that the water table is below a depth of 6 feet or that it is within a depth of 6 feet for less than a month.

Ponding is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. ***Maximum ponding depth*** refers to the depth of the water above the surface of the soil.

Soil Features

Table 21 gives estimates of several important soil features used in land use planning that involves engineering considerations. These features are described in the following paragraphs.

Depth to bedrock is given if bedrock is within a depth of 5 feet. The depth is based on many soil borings and on observations during soil mapping. The rock is either soft or hard. If the rock is soft or fractured, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

Subsidence is the settlement of organic soils or of saturated mineral soils of very low density. Subsidence generally results from either desiccation and shrinkage or oxidation of organic material, or both, following drainage. Subsidence takes place gradually, usually over a period of several years. The table shows the expected initial subsidence, which usually is a result of drainage, and total subsidence, which results from a combination of factors.

Potential frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage mainly to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as ***low, moderate,*** or ***high,*** is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion also is expressed as ***low, moderate,*** or ***high***. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

References

American Association of State Highway and Transportation Officials (AASHTO). 2000. Standard specifications for transportation materials and methods of sampling and testing. 20th edition, 2 volumes.

American Society for Testing and Materials (ASTM). 2001. Standard classification of soils for engineering purposes. ASTM Standard D 2487-00.

Berg, R.C., J.P. Kempton, L.R. Follmer, D.P. McKenna, R.J. Krumm, J.M. Masters, R.C. Anderson, R.L. Meyers, J.E. King, H.E. Canfield, and D.M. Mickelson. 1985. Illinoian and Wisconsinan stratigraphy and environments in northern Illinois. Illinois State Geological Survey Guidebook 19.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep water habitats of the United States. U.S. Fish and Wildlife Service. FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. February 24, 1995. Hydric soils of the United States.

Fehrenbacher, J.B., R.A. Pope, I.J. Jansen, J.D. Alexander, and B.W. Ray. 1978. Soil productivity in Illinois. University of Illinois, College of Agriculture, Cooperative Extension Service Circular 1156.

Hurt, G.W., P.M. Whited, and R.F. Pringle, editors. Version 4.0, 1998. Field indicators of hydric soils in the United States.

Illinois Cooperative Crop Reporting Service. 1995. Illinois agricultural statistics annual summary. Bulletin 95-1.

Jenny, Hans. 1941. Factors of soil formation.

Leighton, M.M., G.E. Ekblaw, and L. Horberg. 1948. Physiographic divisions of Illinois. Illinois State Geological Survey Report of Investigations 129.

Masters, J.M. 1978. Sand and gravel and peat resources in northeastern Illinois. Illinois State Geological Survey Circular 503.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Ray, B.W., and H.L. Wascher. 1965. McHenry County soils. University of Illinois Agricultural Experiment Station Soil Report 81.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

Soil Survey Staff. 1998. Keys to soil taxonomy. 8th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture. 1961. Land capability classification. Soil Conservation Service, U.S. Department of Agriculture Handbook 210.

United States Department of Commerce, Bureau of the Census. 1990. 1990 census of population and housing.

United States Department of Commerce, Bureau of the Census. 1992. 1992 census of agriculture.

Glossary

Ablation till. Loose, permeable till deposited during the final downwasting of glacial ice. Lenses of crudely sorted sand and gravel are common.

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Alpha,alpha-dipyridyl. A dye that when dissolved in 1N ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction indicates a type of redoximorphic feature.

Animal unit month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Aquic conditions. Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Association, soil. A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Backslope. The position that forms the steepest and generally linear, middle portion of a hillslope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.

Basal till. Compact glacial till deposited beneath the ice.

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bench terrace. A raised, level or nearly level strip of earth constructed on or nearly on a contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

Bottom land. The normal flood plain of a stream, subject to flooding.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil,

expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions. Low-chroma zones having a low content of iron, manganese, and clay because of the chemical reduction of iron and manganese and the removal of iron, manganese, and clay. A type of redoximorphic depletion.

Clayey soil. Silty clay, sandy clay, or clay.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Coarse textured soil. Sand or loamy sand.

Cobble (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Colluvium. Soil material or rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions. Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage. Any tillage and planting system in which a cover of crop residue is maintained on at least 30 percent of the soil surface after planting in order to reduce the hazard of water erosion; in areas where soil blowing is the primary concern, a system that maintains a cover of at least 1,000 pounds of flat residue of small grain or the equivalent during the critical erosion period.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the “Soil Survey Manual.”

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Coprogenous earth (sedimentary peat). Fecal material deposited in water by aquatic organisms.

Corrosion. Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cropping system. Growing crops according to a planned system of rotation and management practices.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Dense layer (in tables). A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Depth, soil. Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

Dissimilar soils. Soils that differ sufficiently from the named soil to affect major interpretations. Dissimilar soils are named in the map unit description or are briefly described in a generic fashion.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—***excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,*** and ***very poorly drained***. These classes are defined in the “Soil Survey Manual.”

Drainage, surface. Runoff, or surface flow of water, from an area.

Drainageway. An area of ground at a lower elevation than the surrounding ground and in which water collects and is drained to a closed depression or lake or to a drainageway at a lower elevation. A drainageway may or may not have distinctly incised channels at its upper reaches or throughout its course.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Endosaturation. A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

Episaturation. A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Escarpment. A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Synonym: scarp.

Excess fines (in tables). Excess silt and clay in the soil. The soil does not provide a source of gravel or sand for construction purposes.

Fast intake (in tables). The rapid movement of water into the soil.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called ***normal field capacity, normal moisture capacity,*** or ***capillary capacity***.

Fine textured soil. Sandy clay, silty clay, or clay.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Footslope. The position that forms the inner, gently

inclined surface at the base of a hillslope. In profile, footslopes are commonly concave. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).

Forb. Any herbaceous plant not a grass or a sedge.

Frost action (in tables). Freezing and thawing of soil moisture. Frost action can damage roads, buildings and other structures, and plant roots.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Glacial drift. Pulverized and other rock material transported by glacial ice and then deposited. Also, the sorted and unsorted material deposited by streams flowing from glaciers.

Glacial outwash. Gravel, sand, and silt, commonly stratified, deposited by glacial meltwater.

Glacial till. Unsorted, nonstratified glacial drift consisting of clay, silt, sand, and boulders transported and deposited by glacial ice.

Glaciofluvial deposits. Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur as kames, eskers, deltas, and outwash plains.

Glaciolacustrine deposits. Material ranging from fine clay to sand derived from glaciers and deposited in glacial lakes mainly by glacial meltwater. Many deposits are interbedded or laminated.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water. Water filling all the unblocked pores of the material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock. Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Head slope. A geomorphic component of hills consisting of a laterally concave area of a hillside, especially at the head of a drainageway. The overland waterflow is converging.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the “Soil Survey Manual.” The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or

unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2 .... very low
0.2 to 0.4 .... low
0.4 to 0.75 .... moderately low
0.75 to 1.25 .... moderate
1.25 to 1.75 .... moderately high
1.75 to 2.5 .... high
More than 2.5 .... very high

Interfluve. An elevated area between two drainageways that sheds water to those drainageways.

Intermittent stream. A stream, or reach of a stream, that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Iron depletions. Low-chroma zones having a low content of iron and manganese oxide because of chemical reduction and removal, but having a clay content similar to that of the adjacent matrix. A type of redoximorphic depletion.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Kame. A moundlike hill of glacial drift, composed chiefly of stratified sand and gravel.

Kame terrace. A terracelike ridge consisting of stratified sand and gravel that were deposited by a meltwater stream flowing between a melting glacier and a higher valley wall or lateral moraine and that remained after the disappearance of the ice. It is commonly pitted with kettles and has an irregular ice-contact slope.

Lacustrine deposit. Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Lake plain. A surface marking the floor of an extinct lake, filled in by well sorted, stratified sediments.

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loamy soil. Coarse sandy loam, sandy loam, fine sandy loam, very fine sandy loam, loam, silt loam, silt, clay loam, sandy clay loam, or silty clay loam.

Loess. Fine grained material, dominantly of silt-sized particles, deposited by wind.

Low strength. The soil is not strong enough to support loads.

Major land resource area (MLRA). Major land resource areas, or MLRA's, are geographically associated land resource areas. They are designated by Arabic numbers and identified by a descriptive geographic name.

Masses. Concentrations of substances in the soil matrix that do not have a clearly defined boundary with the surrounding soil material and cannot be removed as a discrete unit. Common compounds making up masses are calcium carbonate, gypsum or other soluble salts, iron oxide, and manganese oxide. Masses consisting of iron oxide or manganese oxide generally are considered a type of redoximorphic concentration.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon. A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

Moraine. An accumulation of earth, stones, and other debris deposited by a glacier. Some types are terminal, lateral, medial, and ground.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—***few, common,*** and ***many;*** size—***fine, medium,*** and ***coarse;*** and contrast—***faint, distinct,*** and ***prominent***. The size measurements are of the diameter along the greatest dimension. ***Fine*** indicates less than 5 millimeters (about 0.2 inch); ***medium,*** from 5 to 15 millimeters (about 0.2 to 0.6 inch); and ***coarse,*** more than 15 millimeters (about 0.6 inch).

Muck. Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nose slope. A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside. The overland waterflow is predominantly divergent.

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

Outwash plain. A landform of mainly sandy or coarse textured material of glaciofluvial origin. An outwash plain is commonly smooth; where pitted, it generally is low in relief.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called “a soil.” A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil adversely affects the specified use.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as “saturated hydraulic conductivity,” which is defined in the “Soil Survey Manual.” In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as “permeability.” Terms describing permeability, measured in inches per hour, are as follows:

Extremely slow	0.0 to 0.01 inch
Very slow	0.01 to 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poor filter (in tables). Because of rapid or very rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid	less than 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Redoximorphic concentrations. Nodules, concretions, soft masses, pore linings, and other features resulting from the accumulation of iron or manganese oxide. An indication of chemical reduction and oxidation resulting from saturation.

Redoximorphic depletions. Low-chroma zones from which iron and manganese oxide or a combination of iron and manganese oxide and clay has been removed. These zones are indications of the chemical reduction of iron resulting from saturation.

Redoximorphic features. Redoximorphic concentrations, redoximorphic depletions, reduced matrices, a positive reaction to alpha,alpha-dipyridyl, and other features indicating the chemical reduction and oxidation of iron and manganese compounds resulting from saturation.

Reduced matrix. A soil matrix that has low chroma in situ because of chemically reduced iron (Fe II).

The chemical reduction results from nearly continuous wetness. The matrix undergoes a change in hue or chroma within 30 minutes after exposure to air as the iron is oxidized (Fe III). A type of redoximorphic feature.

Regolith. The unconsolidated mantle of weathered rock and soil material on the earth's surface; the loose earth material above the solid rock.

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rill. A steep-sided channel resulting from accelerated erosion. A rill generally is a few inches deep and not wide enough to be an obstacle to farm machinery.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rock outcrop. Exposures of bare bedrock other than lava flows and rock-lined pits.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandy soil. Sand or loamy sand.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shoulder. The position that forms the uppermost inclined surface near the top of a hillslope. It is a transition from backslope to summit. The surface is dominantly convex in profile and erosional in origin.

Shrink-swell (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Side slope. A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then

multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey, the slope classes are as follows:

Nearly level	0 to 2 percent
Gently sloping	2 to 4 percent
Moderately sloping	4 to 8 percent
Strongly sloping	8 to 15 percent
Moderately steep	15 to 25 percent
Steep	25 to 45 percent
Very steep	more than 45 percent

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Slow intake (in tables). The slow movement of water into the soil.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief and by the passage of time.

Soil quality. The fitness of a specific kind of soil to function within its surroundings, support plant and animal productivity, maintain or enhance water and air quality, and support human health and habitation.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stream channel. The hollow bed where a natural stream of surface water flows or may flow; the deepest or central part of the bed, formed by the main current and covered more or less continuously by water.

Stream terrace. One of a series of platforms in a stream valley, flanking and more or less parallel to the stream channel. It originally formed near the level of the stream and is the dissected remnants of an abandoned flood plain, streambed, or valley floor that were produced during a former stage of erosion or deposition.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—***platy*** (laminated), ***prismatic*** (vertical axis of aggregates longer than horizontal), ***columnar*** (prisms with rounded tops), ***blocky*** (angular or subangular), and ***granular***. ***Structureless*** soils are either ***single grain*** (each grain by itself, as in dune sand) or ***massive*** (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. The part of the soil below the solum.

Subsurface layer. Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Summit. The topographically highest position of a hillslope. It has a nearly level (planar or only slightly convex) surface.

Surface layer. The soil ordinarily moved in tillage, or

its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the “plow layer,” or the “Ap horizon.”

Surface soil. The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.

Terminal moraine. A belt of thick glacial drift that generally marks the termination of important glacial advances.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are ***sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,*** and ***clay***. The sand, loamy sand, and sandy loam classes may be further divided by specifying “coarse,” “fine,” or “very fine.”

Thin layer (in tables). Otherwise suitable soil material that is too thin for the specified use.

Till plain. An extensive area of nearly level to undulating soils underlain by glacial till.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope. The position that forms the gently inclined surface at the base of a hillslope. Toeslopes in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Understory. Any plants in a forest community that grow to a height of less than 5 feet.

Upland. Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth’s surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow. The uprooting and tipping over of trees by the wind.

Tables

Table 1.--Temperature and Precipitation

(Recorded in the period 1961-90 at Marengo, Illinois)

Month	Temperature: Average daily maximum	Temperature: Average daily minimum	Temperature: Average	Temperature: 2 years in 10 will have-- Maximum temperature higher than--	Temperature: 2 years in 10 will have-- Minimum temperature lower than--	Temperature: Average number of growing degree days*	Precipitation: Average	Precipitation: 2 years in 10 will have-- Less than--	Precipitation: 2 years in 10 will have-- More than--	Precipitation: Average number of days with 0.10 inch or more	Precipitation: Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January----	27.4	9.1	18.3	52	-22	0	1.54	0.55	2.37	4	9.7
February---	32.6	13.4	23.0	57	-15	0	1.12	.58	1.67	3	7.1
March------	44.8	25.0	34.9	76	-1	14	2.37	1.23	3.38	6	6.3
April------	59.4	35.8	47.6	86	15	88	3.64	2.33	4.83	7	1.7
May--------	72.1	45.9	59.0	92	27	301	3.45	2.15	4.62	7	.2
June-------	81.6	55.8	68.7	98	38	558	4.39	2.69	5.91	7	.0
July-------	85.1	60.6	72.9	99	44	707	3.97	2.78	5.07	6	.0
August-----	82.6	58.2	70.4	96	41	633	4.32	1.88	6.39	6	.0
September--	75.4	50.3	62.8	93	31	390	3.94	1.61	6.15	6	.0
October----	63.2	39.3	51.3	86	19	141	2.67	1.13	3.98	5	.2
November---	47.3	28.9	38.1	72	6	20	2.67	1.37	3.80	5	2.0
December---	32.3	15.5	23.9	59	-13	1	2.09	1.04	3.01	5	8.4
Yearly:											
Average---	58.7	36.5	47.6	---	---	---	---	---	---	---	---
Extreme---	---	---	---	100	-23	---	---	---	---	---	---
Total-----	---	---	---	---	---	2,854	36.18	30.73	41.07	67	35.5

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50 degrees F).

Table 2.--Freeze Dates in Spring and Fall

(Recorded in the period 1961-90 at Marengo, Illinois)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	Apr. 24	May 12	May 23
2 years in 10 later than--	Apr. 20	May 7	May 18
5 years in 10 later than--	Apr. 14	Apr. 27	May 8
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 11	Sept. 27	Sept. 24
2 years in 10 earlier than--	Oct. 16	Oct. 3	Sept. 27
5 years in 10 earlier than--	Oct. 26	Oct. 14	Oct. 3

Table 3.--Growing Season

(Recorded in the period 1961-90 at Marengo, Illinois)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	176	144	132
8 years in 10	183	153	137
5 years in 10	194	170	148
2 years in 10	206	188	159
1 year in 10	213	197	165

Table 4.--Classification of the Soils

(An asterisk in the first column indicates a taxadjunct to the series. See text for a description of those characteristics that are outside the range of the series)

Soil name	Family or higher taxonomic class
Ashkum	Fine, mixed, mesic Typic Endoaquolls
Beecher	Fine, illitic, mesic Udollic Epiaqualfs
Bowes	Fine-silty, mixed, mesic Mollic Hapludalfs
Brenton	Fine-silty, mixed, mesic Aquic Argiudolls
Camden	Fine-silty, mixed, mesic Typic Hapludalfs
Caprell	Fine-loamy, mixed, mesic Typic Hapludalfs
Casco	Fine-loamy over sandy or sandy-skeletal, mixed, mesic Typic Hapludalfs
Comfrey	Fine-loamy, mixed, mesic Cumulic Endoaquolls
Dakota	Fine-loamy over sandy or sandy-skeletal, mixed, mesic Typic Argiudolls
Danabrook	Fine-silty, mixed, mesic Oxyaquic Argiudolls
*Dickinson	Coarse-loamy, mixed, mesic Typic Hapludolls
Dresden	Fine-loamy over sandy or sandy-skeletal, mixed, mesic Mollic Hapludalfs
Drummer	Fine-silty, mixed, mesic Typic Endoaquolls
Dunham	Fine-silty, mixed, mesic Typic Endoaquolls
Elburn	Fine-silty, mixed, mesic Aquic Argiudolls
Elliott	Fine, illitic, mesic Aquic Argiudolls
Fox	Fine-loamy over sandy or sandy-skeletal, mixed, mesic Typic Hapludalfs
Geryune	Fine-silty, mixed, mesic Oxyaquic Argiudolls
*Griswold	Fine-loamy, mixed, mesic Typic Argiudolls
Grundelein	Fine-silty, mixed, mesic Aquic Argiudolls
Harpster	Fine-silty, mesic Typic Calciaquolls
Harvard	Fine-silty, mixed, mesic Mollic Hapludalfs
Herbert	Fine-silty, mixed, mesic Udollic Epiaqualfs
Hoopeston	Coarse-loamy, mixed, mesic Aquic Hapludolls
Hooppole	Fine-loamy, mixed, calcareous, mesic Typic Endoaquolls
Houghton	Euic, mesic Typic Medisaprists
Kane	Fine-loamy over sandy or sandy-skeletal, mixed, mesic Aquic Argiudolls
Kidami	Fine-loamy, mixed, mesic Oxyaquic Hapludalfs
Kidder	Fine-loamy, mixed, mesic Typic Hapludalfs
Kish	Fine-loamy, mixed, calcareous, mesic Typic Endoaquolls
Lahoguess	Fine-loamy, mixed, mesic Aquic Argiudolls
La Rose	Fine-loamy, mixed, mesic Typic Argiudolls
Lena	Euic, mesic Typic Medisaprists
Lisbon	Fine-silty, mixed, mesic Aquic Argiudolls
Lismod	Fine-silty, mixed, mesic Aquic Argiudolls
Lorenzo	Fine-loamy over sandy or sandy-skeletal, mixed, mesic Typic Argiudolls
Martinsville	Fine-loamy, mixed, mesic Typic Hapludalfs
Martinton	Fine, illitic, mesic Aquic Argiudolls
McHenry	Fine-loamy, mixed, mesic Typic Hapludalfs
Millbrook	Fine-silty, mixed, mesic Udollic Endoaqualfs
Millington	Fine-loamy, mixed, calcareous, mesic Cumulic Endoaquolls
Millstream	Fine-silty, mixed, mesic Aquollic Hapludalfs
Nappanee	Fine, illitic, mesic Aeric Epiaqualfs
Octagon	Fine-loamy, mixed, mesic Oxyaquic Hapludalfs
Orthents, loamy	Fine-loamy, mixed, mesic Typic Udorthents
Ozaukee	Fine, illitic, mesic Oxyaquic Hapludalfs
Palms	Loamy, mixed, euic, mesic Terric Medisaprists
Parmod	Fine-loamy, mixed, mesic Typic Argiudolls
*Parr	Fine-loamy, mixed, mesic Oxyaquic Argiudolls
Pella	Fine-silty, mixed, mesic Typic Endoaquolls
Peotone	Fine, smectitic, mesic Cumulic Vertic Endoaquolls
Piscasaw	Fine-silty, mixed, mesic Typic Hapludalfs
Proctor	Fine-silty, mixed, mesic Typic Argiudolls
Ringwood	Fine-loamy, mixed, mesic Typic Argiudolls
Rockton	Fine-loamy, mixed, mesic Typic Argiudolls
Rodman	Sandy-skeletal, mixed, mesic Typic Hapludolls
Rush	Fine-silty, mixed, mesic Typic Hapludalfs
Selmass	Fine-loamy, mixed, mesic Typic Endoaquolls
Senachwine	Fine-loamy, mixed, mesic Typic Hapludalfs
Thorp	Fine-silty, mixed, mesic Argiaquic Argialbolls
Torox	Fine-silty, mixed, mesic Aquic Hapludalfs

Table 4.--Classification of the Soils--Continued

Soil name	Family or higher taxonomic class
Troxel	Fine-silty, mixed, mesic Pachic Argiudolls
*Varna	Fine, illitic, mesic Oxyaquic Argiudolls
Virgil	Fine-silty, mixed, mesic Udollic Endoaqualfs
*Warsaw	Fine-loamy over sandy or sandy-skeletal, mixed, mesic Typic Argiudolls
Waupecan	Fine-silty, mixed, mesic Typic Argiudolls
Will	Fine-loamy over sandy or sandy-skeletal, mixed, mesic Typic Endoaquolls
Windere	Fine-silty, mixed, mesic Oxyaquic Hapludalfs

Table 5.--Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
59A	Lisbon silt loam, 0 to 2 percent slopes	2,014	0.5
59B	Lisbon silt loam, 2 to 4 percent slopes	1,181	0.3
60C2	La Rose loam, 5 to 10 percent slopes, eroded	1,042	0.3
62A	Herbert silt loam, 0 to 2 percent slopes	1,181	0.3
67A	Harpster silty clay loam, 0 to 2 percent slopes	3,686	0.9
87A	Dickinson sandy loam, 0 to 2 percent slopes	4,532	1.2
87B	Dickinson sandy loam, 2 to 5 percent slopes	1,329	0.3
87B2	Dickinson sandy loam, 2 to 5 percent slopes, eroded	132	*
100A	Palms muck, 0 to 2 percent slopes	1,736	0.4
103A	Houghton muck, 0 to 2 percent slopes	7,754	2.0
104A	Virgil silt loam, 0 to 2 percent slopes	2,280	0.6
134A	Camden silt loam, 0 to 2 percent slopes	1,299	0.3
134B	Camden silt loam, 2 to 5 percent slopes	1,236	0.3
146A	Elliott silt loam, 0 to 2 percent slopes	1,817	0.5
146B	Elliott silt loam, 2 to 4 percent slopes	3,071	0.8
148A	Proctor silt loam, 0 to 2 percent slopes	3,034	0.8
148B	Proctor silt loam, 2 to 5 percent slopes	2,075	0.5
149A	Brenton silt loam, 0 to 2 percent slopes	6,528	1.7
152A	Drummer silty clay loam, 0 to 2 percent slopes	2,973	0.8
153A	Pella silty clay loam, 0 to 2 percent slopes	20,872	5.3
153A+	Pella silt loam, 0 to 2 percent slopes, overwash	1,479	0.4
172A	Hoopeston sandy loam, 0 to 2 percent slopes	834	0.2
189A	Martinton silt loam, 0 to 2 percent slopes	294	0.1
197A	Troxel silt loam, 0 to 2 percent slopes	1,655	0.4
198A	Elburn silt loam, 0 to 2 percent slopes	5,438	1.4
206A	Thorp silt loam, 0 to 2 percent slopes	1,471	0.4
210A	Lena muck, 0 to 2 percent slopes	1,934	0.5
219A	Millbrook silt loam, 0 to 2 percent slopes	3,466	0.9
221B	Parr silt loam, 2 to 5 percent slopes	5,047	1.3
221C2	Parr silt loam, 5 to 10 percent slopes, eroded	1,016	0.3
223B	Varna silt loam, 2 to 4 percent slopes	4,672	1.2
223C2	Varna silt loam, 4 to 6 percent slopes, eroded	3,404	0.9
223D2	Varna silt loam, 6 to 12 percent slopes, eroded	895	0.2
228B	Nappanee silt loam, 2 to 4 percent slopes	284	0.1
232A	Ashkum silty clay loam, 0 to 2 percent slopes	4,963	1.3
290A	Warsaw loam, 0 to 2 percent slopes	4,653	1.2
290B	Warsaw loam, 2 to 4 percent slopes	6,755	1.7
290C2	Warsaw loam, 4 to 6 percent slopes, eroded	1,846	0.5
297A	Ringwood silt loam, 0 to 2 percent slopes	3,447	0.9
297B	Ringwood silt loam, 2 to 4 percent slopes	16,839	4.3
298B	Beecher silt loam, 2 to 4 percent slopes	534	0.1
310B	McHenry silt loam, 2 to 4 percent slopes	13,321	3.4
318A	Lorenzo loam, 0 to 2 percent slopes	405	0.1
318B	Lorenzo loam, 2 to 4 percent slopes	2,449	0.6
318C2	Lorenzo loam, 4 to 6 percent slopes, eroded	2,230	0.6
318D2	Lorenzo loam, 6 to 12 percent slopes, eroded	1,047	0.3
323B	Casco loam, 2 to 4 percent slopes	885	0.2
323C2	Casco loam, 4 to 6 percent slopes, eroded	3,999	1.0
323C3	Casco clay loam, 4 to 6 percent slopes, severely eroded	750	0.2
323D2	Casco loam, 6 to 12 percent slopes, eroded	4,137	1.1
323D3	Casco clay loam, 6 to 12 percent slopes, severely eroded	1,338	0.3
325A	Dresden silt loam, 0 to 2 percent slopes	1,005	0.3
325B	Dresden silt loam, 2 to 4 percent slopes	2,522	0.6
327A	Fox silt loam, 0 to 2 percent slopes	1,123	0.3
327B	Fox silt loam, 2 to 4 percent slopes	7,484	1.9
327C2	Fox silt loam, 4 to 6 percent slopes, eroded	4,632	1.2
327D2	Fox loam, 6 to 12 percent slopes, eroded	973	0.2
329A	Will loam, 0 to 2 percent slopes	3,356	0.9
330A	Peotone silty clay loam, 0 to 2 percent slopes	990	0.3
343A	Kane silt loam, 0 to 2 percent slopes	4,330	1.1
344A	Harvard silt loam, 0 to 2 percent slopes	562	0.1

See footnote at end of table.

Table 5.--Acreage and Proportionate Extent of the Soils--Continued

Map symbol	Soil name	Acres	Percent
344B	Harvard silt loam, 2 to 5 percent slopes	486	0.1
361B	Kidder loam, 2 to 4 percent slopes	898	0.2
361C	Kidder loam, 4 to 6 percent slopes	2,054	0.5
361C2	Kidder loam, 4 to 6 percent slopes, eroded	10,855	2.8
361C3	Kidder clay loam, 4 to 6 percent slopes, severely eroded	378	0.1
361D2	Kidder loam, 6 to 12 percent slopes, eroded	5,376	1.4
361D3	Kidder clay loam, 6 to 12 percent slopes, severely eroded	1,491	0.4
361E	Kidder loam, 12 to 20 percent slopes	1,521	0.4
361E2	Kidder loam, 12 to 20 percent slopes, eroded	1,480	0.4
361F	Kidder silt loam, 20 to 30 percent slopes	768	0.2
363B	Griswold loam, 2 to 4 percent slopes	645	0.2
363C2	Griswold loam, 4 to 6 percent slopes, eroded	6,109	1.6
363D2	Griswold loam, 6 to 12 percent slopes, eroded	1,179	0.3
369A	Waupecan silt loam, 0 to 2 percent slopes	6,222	1.6
369B	Waupecan silt loam, 2 to 4 percent slopes	2,336	0.6
379A	Dakota loam, 0 to 2 percent slopes	8,146	2.1
379B	Dakota loam, 2 to 4 percent slopes	750	0.2
488A	Hooppole loam, 0 to 2 percent slopes	4,676	1.2
503B	Rockton silt loam, 2 to 6 percent slopes	78	*
512A	Danabrook silt loam, 0 to 2 percent slopes	204	0.1
512B	Danabrook silt loam, 2 to 5 percent slopes	2,533	0.6
523A	Dunham silty clay loam, 0 to 2 percent slopes	12,655	3.2
526A	Grundelein silt loam, 0 to 2 percent slopes	7,483	1.9
527B	Kidami silt loam, 2 to 4 percent slopes	7,158	1.8
527C	Kidami silt loam, 4 to 6 percent slopes	2,831	0.7
527C2	Kidami loam, 4 to 6 percent slopes, eroded	9,900	2.5
527D	Kidami silt loam, 6 to 12 percent slopes	928	0.2
527D2	Kidami loam, 6 to 12 percent slopes, eroded	2,443	0.6
527D3	Kidami clay loam, 6 to 12 percent slopes, severely eroded	1,359	0.3
528A	Lahoguess loam, 0 to 2 percent slopes	3,668	0.9
529A	Selmass loam, 0 to 2 percent slopes	3,095	0.8
530B	Ozaukee silt loam, 2 to 4 percent slopes	1,454	0.4
530C2	Ozaukee silt loam, 4 to 6 percent slopes, eroded	2,066	0.5
530C3	Ozaukee silty clay loam, 4 to 6 percent slopes, severely eroded	257	0.1
530D2	Ozaukee silt loam, 6 to 12 percent slopes, eroded	683	0.2
530D3	Ozaukee silty clay loam, 6 to 12 percent slopes, severely eroded	321	0.1
530E	Ozaukee silt loam, 12 to 20 percent slopes	564	0.1
543B	Piscasaw silt loam, 2 to 4 percent slopes	4,098	1.0
544A	Torox silt loam, 0 to 2 percent slopes	1,346	0.3
545A	Windere silt loam, 0 to 2 percent slopes	367	0.1
545B	Windere silt loam, 2 to 4 percent slopes	790	0.2
557A	Millstream silt loam, 0 to 2 percent slopes	5,328	1.4
570A	Martinsville silt loam, 0 to 2 percent slopes	565	0.1
570B	Martinsville silt loam, 2 to 4 percent slopes	864	0.2
570C2	Martinsville silt loam, 4 to 6 percent slopes, eroded	492	0.1
618E	Senachwine silt loam, 12 to 20 percent slopes	511	0.1
618F	Senachwine silt loam, 20 to 30 percent slopes	281	0.1
624B	Caprell silt loam, 2 to 4 percent slopes	739	0.2
624C2	Caprell silt loam, 4 to 6 percent slopes, eroded	1,552	0.4
624D2	Caprell silt loam, 6 to 12 percent slopes, eroded	184	*
624E	Caprell silt loam, 12 to 20 percent slopes	40	*
625A	Geryune silt loam, 0 to 2 percent slopes	325	0.1
625B	Geryune silt loam, 2 to 5 percent slopes	269	0.1
626A	Kish loam, 0 to 2 percent slopes	3,507	0.9
635A	Lismod silt loam, 0 to 2 percent slopes	357	0.1
635B	Lismod silt loam, 2 to 4 percent slopes	39	*
636B	Parmod silt loam, 2 to 5 percent slopes	24	*
656B	Octagon silt loam, 2 to 4 percent slopes	1,422	0.4
656C2	Octagon silt loam, 4 to 6 percent slopes, eroded	743	0.2
791A	Rush silt loam, 0 to 2 percent slopes	1,327	0.3

See footnote at end of table.

Table 5.--Acreage and Proportionate Extent of the Soils--Continued

Map symbol	Soil name	Acres	Percent
791B	Rush silt loam, 2 to 4 percent slopes	3,157	0.8
791C2	Rush silt loam, 4 to 6 percent slopes, eroded	747	0.2
792A	Bowes silt loam, 0 to 2 percent slopes	1,351	0.3
792B	Bowes silt loam, 2 to 4 percent slopes	1,597	0.4
802B	Orthents, loamy, undulating	1,221	0.3
865	Pits, gravel	3,964	1.0
969E2	Casco-Rodman complex, 12 to 20 percent slopes, eroded	4,433	1.1
969F	Casco-Rodman complex, 20 to 30 percent slopes	2,842	0.7
1067A	Harpster silt loam, 0 to 2 percent slopes, undrained	712	0.2
1082A	Millington silt loam, 0 to 2 percent slopes, undrained, occasionally flooded	1,936	0.5
1100A	Palms muck, 0 to 2 percent slopes, undrained	427	0.1
1103A	Houghton muck, 0 to 2 percent slopes, undrained	4,576	1.2
1153A	Pella silty clay loam, 0 to 2 percent slopes, undrained	928	0.2
1206A	Thorp silt loam, 0 to 2 percent slopes, undrained	44	*
1210A	Lena muck, 0 to 2 percent slopes, undrained	2,491	0.6
1330A	Peotone silty clay loam, 0 to 2 percent slopes, undrained	480	0.1
1488A	Hooppole loam, 0 to 2 percent slopes, undrained	525	0.1
1529A	Selmass loam, 0 to 2 percent slopes, undrained	79	*
1626A	Kish loam, 0 to 2 percent slopes, undrained	404	0.1
1776A	Comfrey loam, 0 to 2 percent slopes, undrained, occasionally flooded	2,269	0.6
4103A	Houghton muck, 0 to 2 percent slopes, ponded	2,592	0.7
8082A	Millington silt loam, 0 to 2 percent slopes, occasionally flooded	2,460	0.6
8776A	Comfrey loam, 0 to 2 percent slopes, occasionally flooded	6,538	1.7
W	Water	6,991	1.8
	Total	391,220	100.0

* Less than 0.05 percent. The combined extent of the soils assigned an asterisk in the "Percent" column is about 0.3 percent of the survey area.

Table 6.--Main Cropland Limitations and Hazards

(Only the soils suitable for crops are listed. See text for a description of the limitations and hazards listed in this table)

Map symbol and soil name	Cropland limitations or hazards
59A:	
Lisbon	Wetness.
59B:	
Lisbon	Water erosion, wetness.
60C2:	
La Rose	Water erosion.
62A:	
Herbert	Wetness.
67A:	
Harpster	Excessive lime, ponding, poor tilth.
87A:	
Dickinson	Excessive permeability.
87B:	
Dickinson	Excessive permeability, water erosion.
87B2:	
Dickinson	Excessive permeability, water erosion.
100A:	
Palms	Ponding, wind erosion, subsidence.
103A:	
Houghton	Ponding, wind erosion, subsidence.
104A:	
Virgil	Wetness.
134A:	
Camden	Crusting.
134B:	
Camden	Crusting, water erosion.
146A:	
Elliott	Restricted permeability, wetness.
146B:	
Elliott	Restricted permeability, water erosion.
148A:	
Proctor	None.

Table 6.--Main Cropland Limitations and Hazards--Continued

Map symbol and soil name	Cropland limitations or hazards
148B:	
Proctor	Water erosion, wetness.
149A:	
Brenton	Wetness.
152A:	
Drummer	Ponding, poor tilth.
153A:	
Pella	Ponding, poor tilth.
153A+:	
Pella	Ponding.
172A:	
Hoopeston	Excessive permeability, wetness.
189A:	
Martinton	Wetness.
197A:	
Troxel	None.
198A:	
Elburn	Wetness.
206A:	
Thorp	Ponding, restricted permeability.
210A:	
Lena	Ponding, wind erosion, subsidence.
219A:	
Millbrook	Wetness.
221B:	
Parr	Water erosion.
221C2:	
Parr	Water erosion.
223B:	
Varna	Restricted permeability, water erosion.
223C2:	
Varna	Restricted permeability, water erosion.
223D2:	
Varna	Restricted permeability, water erosion.

Table 6.--Main Cropland Limitations and Hazards--Continued

Map symbol and soil name	Cropland limitations or hazards
228B:	
Nappanee	Crusting, restricted permeability, water erosion, wetness.
232A:	
Ashkum	Ponding, poor tilth.
290A:	
Warsaw	Excessive permeability.
290B:	
Warsaw	Excessive permeability, water erosion.
290C2:	
Warsaw	Excessive permeability, water erosion.
297A:	
Ringwood	None.
297B:	
Ringwood	Water erosion.
298B:	
Beecher	Restricted permeability, water erosion, wetness.
310B:	
McHenry	Water erosion.
318A:	
Lorenzo	Excessive permeability, low available water capacity,
318B:	
Lorenzo	Excessive permeability, low available water capacity, water erosion.
318C2:	
Lorenzo	Excessive permeability, low available water capacity, water erosion.
318D2:	
Lorenzo	Excessive permeability, low available water capacity, water erosion.
323B:	
Casco	Excessive permeability, low available water capacity, water erosion.
323C2:	
Casco	Excessive permeability, low available water capacity, water erosion.

Table 6.--Main Cropland Limitations and Hazards--Continued

Map symbol and soil name	Cropland limitations or hazards
323C3:	
Casco	Crusting, excessive permeability, low available water capacity, poor tilth, water erosion.
323D2:	
Casco	Excessive permeability, low available water capacity, water erosion.
323D3:	
Casco	Crusting, excessive permeability, low available water capacity, poor tilth, water erosion.
325A:	
Dresden	Excessive permeability.
325B:	
Dresden	Excessive permeability, water erosion.
327A:	
Fox	Excessive permeability.
327B:	
Fox	Excessive permeability, water erosion.
327C2:	
Fox	Excessive permeability, water erosion.
327D2:	
Fox	Excessive permeability, water erosion.
329A:	
Will	Excessive permeability, ponding.
330A:	
Peotone	Ponding, poor tilth.
343A:	
Kane	Excessive permeability, wetness.
344A:	
Harvard	Crusting.
344B:	
Harvard	Crusting, water erosion.
361B:	
Kidder	Water erosion.

Table 6.--Main Cropland Limitations and Hazards--Continued

Map symbol and soil name	Cropland limitations or hazards
361C:	
Kidder	Water erosion.
361C2:	
Kidder	Water erosion.
361C3:	
Kidder	Crusting, poor tilth, water erosion.
361D2:	
Kidder	Water erosion.
361D3:	
Kidder	Crusting, poor tilth, water erosion.
361E:	
Kidder	Water erosion.
361E2:	
Kidder	Water erosion.
363B:	
Griswold	Water erosion.
363C2:	
Griswold	Water erosion.
363D2:	
Griswold	Water erosion.
369A:	
Waupecan	Excessive permeability.
369B:	
Waupecan	Excessive permeability, water erosion.
379A:	
Dakota	Excessive permeability.
379B:	
Dakota	Excessive permeability, water erosion.
488A:	
Hooppole	Excessive permeability, ponding.
503B:	
Rockton	Depth to bedrock, excessive permeability, water erosion.
512A:	
Danabrook	None.
512B:	
Danabrook	Water erosion.

Table 6.--Main Cropland Limitations and Hazards--Continued

Map symbol and soil name	Cropland limitations or hazards
523A:	
Dunham	Excessive permeability, ponding, poor tilth.
526A:	
Grundelein	Excessive permeability, wetness.
527B:	
Kidami	Crusting, water erosion.
527C:	
Kidami	Crusting, water erosion.
527C2:	
Kidami	Crusting, water erosion.
527D:	
Kidami	Crusting, water erosion.
527D2:	
Kidami	Crusting, water erosion.
527D3:	
Kidami	Crusting, poor tilth, water erosion.
528A:	
Lahoguess	Excessive permeability, wetness.
529A:	
Selmass	Excessive permeability, ponding.
530B:	
Ozaukee	Crusting, restricted permeability, water erosion.
530C2:	
Ozaukee	Crusting, restricted permeability, water erosion.
530C3:	
Ozaukee	Crusting, poor tilth, restricted permeability, water erosion.
530D2:	
Ozaukee	Crusting, restricted permeability, water erosion.

Table 6.--Main Cropland Limitations and Hazards--Continued

Map symbol and soil name	Cropland limitations or hazards
530D3:	
Ozaukee	Crusting, poor tilth, restricted permeability, water erosion.
530E:	
Ozaukee	Crusting, restricted permeability, water erosion.
543B:	
Piscasaw	Crusting, water erosion.
544A:	
Torox	Crusting, wetness.
545A:	
Windere	None.
545B:	
Windere	Water erosion.
557A:	
Millstream	Excessive permeability, wetness.
570A:	
Martinsville	None.
570B:	
Martinsville	Water erosion.
570C2:	
Martinsville	Water erosion.
618E:	
Senachwine	Crusting, water erosion.
624B:	
Caprell	Crusting, water erosion.
624C2:	
Caprell	Crusting, water erosion.
624D2:	
Caprell	Crusting, water erosion.
624E:	
Caprell	Crusting, water erosion.
625A:	
Geryune	None.
625B:	
Geryune	Water erosion.

Table 6.--Main Cropland Limitations and Hazards--Continued

Map symbol and soil name	Cropland limitations or hazards
626A:	
Kish	Ponding.
635A:	
Lismod	Wetness.
635B:	
Lismod	Water erosion, wetness.
636B:	
Parmod	Water erosion.
656B:	
Octagon	Water erosion.
656C2:	
Octagon	Water erosion.
791A:	
Rush	Excessive permeability.
791B:	
Rush	Excessive permeability, water erosion.
791C2:	
Rush	Excessive permeability, water erosion.
792A:	
Bowes	Excessive permeability.
792B:	
Bowes	Excessive permeability, water erosion.
802B:	
Orthents, loamy	Crusting, water erosion.
865:	
Pits, gravel.	
969E2:	
Casco.	
Rodman	Excessive permeability, gravelly, low available water capacity, water erosion.
8082A:	
Millington	Flooding, ponding.
8776A:	
Comfrey	Flooding.

Table 7.--Land Capability and Yields per Acre of Crops and Pasture

(Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Map symbol and soil name	Land capability	Corn	Soybeans	Winter wheat	Oats	Orchardgrass-alfalfa hay	Bromegrass-alfalfa
		Bu	Bu	Bu	Bu	Tons	AUM*
59A-------------- Lisbon	I	155	51	63	92	5.9	---
59B-------------- Lisbon	IIe	154	50	62	92	5.9	---
60C2------------- La Rose	IIIe	116	39	49	70	4.5	7.5
62A-------------- Herbert	IIw	140	44	56	81	5.4	9.0
67A-------------- Harpster	IIw	136	44	52	74	---	---
87A-------------- Dickinson	IIIs	112	38	45	67	3.9	7.9
87B-------------- Dickinson	IIIe	111	37	45	66	3.8	7.8
87B2------------- Dickinson	IIIe	108	36	43	64	3.7	7.6
100A------------- Palms	IIIw	118	35	---	72	---	---
103A------------- Houghton	IIIw	130	35	---	80	---	---
104A------------- Virgil	I	148	45	60	84	5.6	9.3
134A------------- Camden	I	125	39	55	72	5.0	8.3
134B------------- Camden	IIe	124	39	54	71	5.0	8.2
146A------------- Elliott	IIw	128	45	55	79	5.1	---
146B------------- Elliott	IIe	127	45	54	78	5.1	---
148A------------- Proctor	I	144	44	59	88	5.5	---
148B------------- Proctor	IIe	143	44	58	87	5.4	---
149A------------- Brenton	I	160	47	62	91	5.9	---

See footnote at end of table.

Table 7.--Land Capability and Yields per Acre of Crops and Pasture

Map symbol and soil name	Land capability	Corn	Soybeans	Winter wheat	Oats	Orchardgrass-alfalfa hay	Bromegrass-alfalfa
		Bu	Bu	Bu	Bu	Tons	AUM*
152A------------- Drummer	IIw	154	51	61	83	---	---
153A------------- Pella	IIw	140	48	56	78	---	---
153A+------------ Pella	IIw	140	48	56	78	---	---
172A------------- Hoopeston	IIs	105	33	47	70	4.1	---
189A------------- Martinton	IIw	135	45	57	84	5.3	---
197A------------- Troxel	I	148	45	55	79	5.4	---
198A------------- Elburn	I	161	50	63	94	6.1	---
206A------------- Thorp	IIw	126	42	51	69		---
210A------------- Lena	IIIw	125	41	---	71	---	---
219A------------- Millbrook	I	144	43	59	81	5.4	9.0
221B------------- Parr	IIe	127	44	56	77	5.2	---
221C2------------ Parr	IIIe	121	41	53	73	5.0	---
223B------------- Varna	IIe	122	41	52	74	4.8	---
223C2------------ Varna	IIIe	117	39	50	71	4.6	7.6
223D2------------ Varna	IIIe	114	38	49	70	4.5	7.4
228B------------- Nappanee	IIIe	106	35	48	64	3.8	7.2
232A------------- Ashkum	IIw	130	47	54	79	---	---
290A------------- Warsaw	IIs	115	40	53	74	4.6	---
290B------------- Warsaw	IIe	114	40	52	73	4.6	---
290C2------------ Warsaw	IIe	109	38	50	70	4.4	7.3

See footnote at end of table.

Table 7.--Land Capability and Yields per Acre of Crops and Pasture

Map symbol and soil name	Land capability	Corn	Soybeans	Winter wheat	Oats	Orchardgrass-alfalfa hay	Bromegrass-alfalfa
		Bu	Bu	Bu	Bu	Tons	AUM*
297A------------- Ringwood	I	128	44	59	80	5.2	8.7
297B------------- Ringwood	IIe	127	44	58	79	5.1	8.6
298B------------- Beecher	IIe	115	39	50	71	4.4	7.4
310B------------- McHenry	IIe	115	37	51	71	4.6	7.6
318A------------- Lorenzo	IIIs	92	30	44	61	3.6	6.0
318B------------- Lorenzo	IIIs	91	30	44	60	3.6	5.9
318C2------------ Lorenzo	IIIe	86	28	41	57	3.3	5.6
318D2------------ Lorenzo	IIIe	84	27	40	56	3.3	5.5
323B------------- Casco	IIIe	90	32	41	75	3.5	5.8
323C2------------ Casco	IIIe	88	31	38	73	3.3	5.5
323C3------------ Casco	IIIe	75	25	32	50	2.7	4.5
323D2------------ Casco	IVe	80	27	37	65	3.2	5.3
323D3------------ Casco	IVe	70	21	31	45	2.6	4.4
325A------------- Dresden	IIs	110	36	49	69	4.5	7.5
325B------------- Dresden	IIe	109	36	49	68	4.5	7.4
327A------------- Fox	IIs	105	35	42	70	4.3	7.2
327B------------- Fox	IIe	104	35	42	69	4.3	7.1
327C2------------ Fox	IIe	100	33	40	65	4.1	6.8
327D2------------ Fox	IIIe	95	31	38	60	4.0	6.7

See footnote at end of table.

Table 7.--Land Capability and Yields per Acre of Crops and Pasture

Map symbol and soil name	Land capability	Corn	Soybeans	Winter wheat	Oats	Orchardgrass-alfalfa hay	Bromegrass-alfalfa
		Bu	Bu	Bu	Bu	Tons	AUM*
329A------------ Will	IIw	105	38	45	66	---	---
330A------------ Peotone	IIw	123	42	43	58	---	---
343A------------ Kane	IIs	122	43	55	76	4.8	---
344A------------ Harvard	I	132	41	54	78	5.2	8.7
344B------------ Harvard	IIe	131	41	53	77	5.1	8.6
361B------------ Kidder	IIe	100	35	45	66	4.1	6.8
361C------------ Kidder	IIe	99	34	44	66	4.0	6.7
361C2----------- Kidder	IIe	96	33	43	64	3.9	6.5
361C3----------- Kidder	IIe	89	31	40	59	3.6	6.0
361D2----------- Kidder	IIIe	94	33	42	62	3.8	6.4
361D3----------- Kidder	IVe	87	30	39	58	3.5	5.9
361E------------ Kidder	IVe	90	31	40	60	3.6	6.0
361E2----------- Kidder	IVe	83	29	37	55	3.4	5.6
361F------------ Kidder	VIe	---	---	---	---	3.1	5.2
363B------------ Griswold	IIe	111	41	55	75	4.8	---
363C2----------- Griswold	IIIe	106	39	53	72	4.6	7.6
363D2----------- Griswold	IIIe	104	38	52	71	4.5	7.4
369A------------ Waupecan	I	149	50	62	81	5.3	---
369B------------ Waupecan	IIe	148	49	61	80	5.2	---
379A------------ Dakota	IIe	107	36	51	67	4.5	---

See footnote at end of table.

Table 7.--Land Capability and Yields per Acre of Crops and Pasture

Map symbol and soil name	Land capability	Corn	Soybeans	Winter wheat	Oats	Orchardgrass-alfalfa hay	Bromegrass-alfalfa
		Bu	Bu	Bu	Bu	Tons	AUM*
379B------------- Dakota	IIe	106	36	50	66	4.4	---
488A------------- Hooppole	IIw	132	44	53	77	---	---
503B------------- Rockton	IIs	108	35	50	76	4.4	---
512A------------- Danabrook	I	141	46	60	85	5.6	---
512B------------- Danabrook	IIe	140	46	59	84	5.6	---
523A------------- Dunham	IIw	144	46	59	81	---	---
526A------------- Grundelein	I	150	46	60	89	5.7	---
527B------------- Kidami	IIe	110	38	48	68	4.4	7.4
527C------------- Kidami	IIe	109	37	47	67	4.3	7.3
527C2------------ Kidami	IIe	106	36	46	65	4.2	7.0
527D------------- Kidami	IIIe	107	36	46	65	4.2	7.1
527D2------------ Kidami	IIIe	103	35	45	63	4.1	6.9
527D3------------ Kidami	IIIe	95	33	41	58	3.8	6.4
528A------------- Lahoguess	I	123	41	53	76	4.9	---
529A------------- Selmass	IIw	130	42	50	72	---	---
530B------------- Ozaukee	IIe	105	32	47	75	5.0	4.2
530C2------------ Ozaukee	IIe	101	30	45	72	4.8	4.0
530C3------------ Ozaukee	IIIe	94	28	41	67	4.5	3.7
530D2------------ Ozaukee	IIIe	99	30	44	71	4.6	3.9
530D3------------ Ozaukee	IIIe	91	28	41	65	4.4	3.6

See footnote at end of table.

Table 7.--Land Capability and Yields per Acre of Crops and Pasture

Map symbol and soil name	Land capability	Corn	Soybeans	Winter wheat	Oats	Orchardgrass-alfalfa hay	Bromegrass-alfalfa
		Bu	Bu	Bu	Bu	Tons	AUM*
530E------------- Ozaukee	IVe	94	28	42	68	4.4	3.7
543B------------- Piscasaw	IIe	125	41	55	70	5.1	8.4
544A------------- Torox	I	126	41	55	72	5.1	8.4
545A------------- Windere	I	133	42	56	79	5.2	8.5
545B------------- Windere	IIe	132	42	55	78	5.1	8.4
557A------------- Millstream	I	135	42	57	79	5.2	8.7
570A------------- Martinsville	I	121	42	51	66	4.8	8.0
570B------------- Martinsville	IIe	120	42	50	65	4.8	7.9
570C2------------ Martinsville	IIe	115	40	48	63	4.6	7.6
618E------------- Senachwine	IVe	99	34	43	61	3.9	6.6
618F------------- Senachwine	VIe	---	---	---	---	3.3	5.6
624B------------- Caprell	IIe	110	38	48	68	4.4	7.4
624C2------------ Caprell	IIe	106	36	46	65	4.2	7.0
624D2------------ Caprell	IIIe	103	35	45	63	4.1	6.9
624E------------- Caprell	IVe	99	34	43	61	3.9	6.6
625A------------- Geryune	I	141	46	60	85	5.6	---
625B------------- Geryune	IIe	140	46	59	84	5.5	---
626A------------- Kish	IIw	132	44	53	77	---	---
635A------------- Lismod	I	155	51	63	92	5.9	---
635B------------- Lismod	IIe	153	50	62	91	5.8	---

See footnote at end of table.

Table 7.--Land Capability and Yields per Acre of Crops and Pasture

Map symbol and soil name	Land capability	Corn	Soybeans	Winter wheat	Oats	Orchardgrass-alfalfa hay	Bromegrass-alfalfa
		Bu	Bu	Bu	Bu	Tons	AUM*
636B------------- Parmod	IIe	128	44	56	77	5.2	---
656B------------- Octagon	IIe	115	40	52	74	5.0	8.2
656C2------------ Octagon	IIe	110	38	50	71	4.7	7.8
791A------------- Rush	I	132	46	57	77	5.5	9.0
791B------------- Rush	IIe	131	46	56	76	5.4	8.9
791C2------------ Rush	IIe	125	44	54	73	5.2	8.6
792A------------- Bowes	I	141	46	60	79	5.3	9.3
792B------------- Bowes	IIe	140	46	59	78	5.2	9.2
802B------------- Orthents, loamy	IIe	85	27	30	55	3.7	6.2
865. Pits, gravel							
969E2------------		---	---	---	---	2.5	4.0
Casco-----------	VIe						
Rodman----------	VIs						
969F-------------		---	---	---	---	---	3.8
Casco-----------	VIIe						
Rodman----------	VIIs						
1067A------------ Harpster	Vw	---	---	---	---	---	---
1082A------------ Millington	Vw	---	---	---	---	---	---
1100A------------ Palms	Vw	---	---	---	---	---	---
1103A------------ Houghton	Vw	---	---	---	---	---	---
1153A------------ Pella	Vw	---	---	---	---	---	---
1206A------------ Thorp	Vw	---	---	---	---	---	---
1210A------------ Lena	Vw	---	---	---	---	---	---

See footnote at end of table.

Table 7.--Land Capability and Yields per Acre of Crops and Pasture

Map symbol and soil name	Land capability	Corn	Soybeans	Winter wheat	Oats	Orchardgrass-alfalfa hay	Bromegrass-alfalfa
		Bu	Bu	Bu	Bu	Tons	AUM*
1330A------------ Peotone	Vw	---	---	---	---	---	---
1488A------------ Hooppole	Vw	---	---	---	---	---	---
1529A------------ Selmass	Vw	---	---	---	---	---	---
1626A------------ Kish	Vw	---	---	---	---	---	---
1776A------------ Comfrey	Vw	---	---	---	---	---	---
4103A------------ Houghton	VIw	---	---	---	---	---	---
8082A------------ Millington	IIw	133	41	52	68	---	---
8776A------------ Comfrey	IIw	140	46	52	68	---	---

* Animal unit month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

Table 8.--Main Pasture Limitations and Hazards

(Only the soils suitable for pasture are listed. See text for a description of the limitations and hazards listed in this table)

Map symbol and soil name	Pasture limitations or hazards
60C2:	
La Rose	Water erosion.
62A:	
Herbert	None.
87A:	
Dickinson	Low pH.
87B:	
Dickinson	Low pH, water erosion.
87B2:	
Dickinson	Low pH, water erosion.
104A:	
Virgil	Low pH.
134A:	
Camden	Low pH.
134B:	
Camden	Low pH, water erosion.
219A:	
Millbrook	Low pH.
221C2:	
Parr	Water erosion.
223C2:	
Varna	Water erosion.
223D2:	
Varna	Equipment limitation, water erosion.
228B:	
Nappanee	Low pH, water erosion.
298B:	
Beecher	Low pH, water erosion.
310B:	
McHenry	Low pH, water erosion.
318A:	
Lorenzo	None.
318B:	
Lorenzo	Water erosion.
318C2:	
Lorenzo	Water erosion.

Table 8.--Main Pasture Limitations and Hazards--Continued

Map symbol and soil name	Pasture limitations or hazards
318D2:	
Lorenzo	Equipment limitation, water erosion.
323B:	
Casco	Water erosion.
323C2:	
Casco	Water erosion.
323C3:	
Casco	Low fertility, water erosion.
323D2:	
Casco	Equipment limitation, water erosion.
323D3:	
Casco	Equipment limitation, low fertility, water erosion.
325A:	
Dresden	None.
325B:	
Dresden	Water erosion.
327A:	
Fox	Low pH.
327B:	
Fox	Low pH, water erosion.
327C2:	
Fox	Low pH, water erosion.
327D2:	
Fox	Equipment limitation, low pH, water erosion.
344A:	
Harvard	Low pH.
344B:	
Harvard	Low pH, water erosion.
361B:	
Kidder	Low fertility, water erosion.
361C:	
Kidder	Low fertility, water erosion.
361C2:	
Kidder	Low fertility, water erosion.

Table 8.--Main Pasture Limitations and Hazards--Continued

Map symbol and soil name	Pasture limitations or hazards
361C3:	
Kidder	Low fertility, water erosion.
361D2:	
Kidder	Equipment limitation, low fertility, water erosion.
361D3:	
Kidder	Equipment limitation, low fertility, water erosion.
361E:	
Kidder	Equipment limitation, low fertility, water erosion.
361E2:	
Kidder	Equipment limitation, low fertility, water erosion.
361F:	
Kidder	Equipment limitation, low fertility, water erosion.
363C2:	
Griswold	Water erosion.
363D2:	
Griswold	Equipment limitation, water erosion.
527B:	
Kidami	Low pH, water erosion.
527C:	
Kidami	Low pH, water erosion.
527C2:	
Kidami	Low pH, water erosion.
527D:	
Kidami	Equipment limitation, low pH, water erosion.
527D2:	
Kidami	Equipment limitation, low pH, water erosion.
527D3:	
Kidami	Equipment limitation, low fertility, low pH, water erosion.

Table 8.--Main Pasture Limitations and Hazards--Continued

Map symbol and soil name	Pasture limitations or hazards
530B:	
Ozaukee	Water erosion.
530C2:	
Ozaukee	Water erosion.
530C3:	
Ozaukee	Water erosion.
530D2:	
Ozaukee	Equipment limitation, water erosion.
530D3:	
Ozaukee	Equipment limitation, water erosion.
530E:	
Ozaukee	Equipment limitation, water erosion.
543B:	
Piscasaw	Low pH, water erosion.
544A:	
Torox	Low pH.
545A:	
Windere	Low pH.
545B:	
Windere	Low pH, water erosion.
557A:	
Millstream	Low pH.
570A:	
Martinsville	Low pH.
570B:	
Martinsville	Low pH, water erosion.
570C2:	
Martinsville	Low pH, water erosion.
618E:	
Senachwine	Equipment limitation, low pH, water erosion.
618F:	
Senachwine	Equipment limitation, low pH, water erosion.
624B:	
Caprell	Low pH, water erosion.

Table 8.--Main Pasture Limitations and Hazards--Continued

Map symbol and soil name	Pasture limitations or hazards
624C2:	
Caprell	Low pH, water erosion.
624D2:	
Caprell	Equipment limitation, low pH, water erosion.
624E:	
Caprell	Equipment limitation, low pH, water erosion.
656B:	
Octagon	Water erosion.
656C2:	
Octagon	Water erosion.
791A:	
Rush	Low pH.
791B:	
Rush	Low pH, water erosion.
791C2:	
Rush	Low pH, water erosion.
792A:	
Bowes	Low pH.
792B:	
Bowes	Low pH, water erosion.
802B:	
Orthents, loamy	Water erosion.
969E2:	
Casco	Equipment limitation, water erosion.
Rodman	Equipment limitation, gravelly surface layer, low available water capacity, water erosion.
969F:	
Casco.	
Rodman	Equipment limitation, gravelly surface layer, low available water capacity, water erosion.

Table 9.--Prime Farmland

(Only the soils considered prime farmland are listed. Urban or built-up areas of the soils listed are not considered prime farmland. If a soil is prime farmland only under certain conditions, the conditions are specified in parentheses after the soil name)

Map symbol	Soil name
59A	Lisbon silt loam, 0 to 2 percent slopes
59B	Lisbon silt loam, 2 to 4 percent slopes
60C2	La Rose loam, 5 to 10 percent slopes, eroded
62A	Herbert silt loam, 0 to 2 percent slopes (where drained)
67A	Harpster silty clay loam, 0 to 2 percent slopes (where drained)
87A	Dickinson sandy loam, 0 to 2 percent slopes
87B	Dickinson sandy loam, 2 to 5 percent slopes
87B2	Dickinson sandy loam, 2 to 5 percent slopes, eroded
104A	Virgil silt loam, 0 to 2 percent slopes (where drained)
134A	Camden silt loam, 0 to 2 percent slopes
134B	Camden silt loam, 2 to 5 percent slopes
146A	Elliott silt loam, 0 to 2 percent slopes
146B	Elliott silt loam, 2 to 4 percent slopes
148A	Proctor silt loam, 0 to 2 percent slopes
148B	Proctor silt loam, 2 to 5 percent slopes
149A	Brenton silt loam, 0 to 2 percent slopes
152A	Drummer silty clay loam, 0 to 2 percent slopes (where drained)
153A	Pella silty clay loam, 0 to 2 percent slopes (where drained)
153A+	Pella silt loam, 0 to 2 percent slopes, overwash (where drained)
172A	Hoopeston sandy loam, 0 to 2 percent slopes
189A	Martinton silt loam, 0 to 2 percent slopes
197A	Troxel silt loam, 0 to 2 percent slopes
198A	Elburn silt loam, 0 to 2 percent slopes
206A	Thorp silt loam, 0 to 2 percent slopes (where drained)
219A	Millbrook silt loam, 0 to 2 percent slopes (where drained)
221B	Parr silt loam, 2 to 5 percent slopes
223B	Varna silt loam, 2 to 4 percent slopes
223C2	Varna silt loam, 4 to 6 percent slopes, eroded
228B	Nappanee silt loam, 2 to 4 percent slopes
232A	Ashkum silty clay loam, 0 to 2 percent slopes (where drained)
290A	Warsaw loam, 0 to 2 percent slopes
290B	Warsaw loam, 2 to 4 percent slopes
290C2	Warsaw loam, 4 to 6 percent slopes, eroded
297A	Ringwood silt loam, 0 to 2 percent slopes
297B	Ringwood silt loam, 2 to 4 percent slopes
298B	Beecher silt loam, 2 to 4 percent slopes
310B	McHenry silt loam, 2 to 4 percent slopes
325A	Dresden silt loam, 0 to 2 percent slopes
325B	Dresden silt loam, 2 to 4 percent slopes
327A	Fox silt loam, 0 to 2 percent slopes
327B	Fox silt loam, 2 to 4 percent slopes
327C2	Fox silt loam, 4 to 6 percent slopes, eroded
329A	Will loam, 0 to 2 percent slopes (where drained)
330A	Peotone silty clay loam, 0 to 2 percent slopes (where drained)
343A	Kane silt loam, 0 to 2 percent slopes
344A	Harvard silt loam, 0 to 2 percent slopes
344B	Harvard silt loam, 2 to 5 percent slopes
361B	Kidder loam, 2 to 4 percent slopes
361C	Kidder loam, 4 to 6 percent slopes
361C2	Kidder loam, 4 to 6 percent slopes, eroded
363B	Griswold loam, 2 to 4 percent slopes
363C2	Griswold loam, 4 to 6 percent slopes, eroded
369A	Waupecan silt loam, 0 to 2 percent slopes
369B	Waupecan silt loam, 2 to 4 percent slopes
379A	Dakota loam, 0 to 2 percent slopes
379B	Dakota loam, 2 to 4 percent slopes
488A	Hooppole loam, 0 to 2 percent slopes (where drained)
503B	Rockton silt loam, 2 to 6 percent slopes
512A	Danabrook silt loam, 0 to 2 percent slopes

Table 9.--Prime Farmland--Continued

Map symbol	Soil name
512B	Danabrook silt loam, 2 to 5 percent slopes
523A	Dunham silty clay loam, 0 to 2 percent slopes (where drained)
526A	Grundelein silt loam, 0 to 2 percent slopes
527B	Kidami silt loam, 2 to 4 percent slopes
527C	Kidami silt loam, 4 to 6 percent slopes
527C2	Kidami loam, 4 to 6 percent slopes, eroded
528A	Lahoguess loam, 0 to 2 percent slopes
529A	Selmass loam, 0 to 2 percent slopes (where drained)
530B	Ozaukee silt loam, 2 to 4 percent slopes
530C2	Ozaukee silt loam, 4 to 6 percent slopes, eroded
543B	Piscasaw silt loam, 2 to 4 percent slopes
544A	Torox silt loam, 0 to 2 percent slopes
545A	Windere silt loam, 0 to 2 percent slopes
545B	Windere silt loam, 2 to 4 percent slopes
557A	Millstream silt loam, 0 to 2 percent slopes
570A	Martinsville silt loam, 0 to 2 percent slopes
570B	Martinsville silt loam, 2 to 4 percent slopes
570C2	Martinsville silt loam, 4 to 6 percent slopes, eroded
624B	Caprell silt loam, 2 to 4 percent slopes
624C2	Caprell silt loam, 4 to 6 percent slopes, eroded
625A	Geryune silt loam, 0 to 2 percent slopes
625B	Geryune silt loam, 2 to 5 percent slopes
626A	Kish loam, 0 to 2 percent slopes (where drained)
635A	Lismod silt loam, 0 to 2 percent slopes
635B	Lismod silt loam, 2 to 4 percent slopes
636B	Parmod silt loam, 2 to 5 percent slopes
656B	Octagon silt loam, 2 to 4 percent slopes
656C2	Octagon silt loam, 4 to 6 percent slopes, eroded
791A	Rush silt loam, 0 to 2 percent slopes
791B	Rush silt loam, 2 to 4 percent slopes
791C2	Rush silt loam, 4 to 6 percent slopes, eroded
792A	Bowes silt loam, 0 to 2 percent slopes
792B	Bowes silt loam, 2 to 4 percent slopes
8082A	Millington silt loam, 0 to 2 percent slopes, occasionally flooded (where drained)
8776A	Comfrey loam, 0 to 2 percent slopes, occasionally flooded (where drained)

Table 10.--Windbreaks and Environmental Plantings

(Absence of an entry indicates that trees generally do not grow to the given height on that soil)

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
59A: Lisbon	Silky dogwood, coralberry, swamp holly, maple-leaved arrowwood, black chokeberry.	Iowa crab, American plum, shadbush, southern black haw.	Washington hawthorn, nannyberry, eastern redcedar, northern white-cedar, red oak, tamarack.	Norway spruce hackberry, green ash, yellow-poplar, baldcypress.	Eastern cottonwood, eastern white pine, pin oak.
59B: Lisbon	Silky dogwood, coralberry, swamp holly, maple-leaved arrowwood, black chokeberry.	Iowa crab, American plum, shadbush, southern black haw.	Washington hawthorn, nannyberry, eastern redcedar, northern white-cedar, red oak, tamarack.	Norway spruce hackberry, green ash, yellow-poplar, baldcypress.	Eastern cottonwood, eastern white pine, pin oak.
60C2: La Rose	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
62A: Herbert	Silky dogwood, coralberry, swamp holly, maple-leaved arrowwood, black chokeberry.	Iowa crab, American plum, shadbush, southern black haw.	Washington hawthorn, nannyberry, eastern redcedar, northern white-cedar, red oak, tamarack.	Norway spruce, hackberry, green ash, yellow-poplar, baldcypress.	Eastern cottonwood, eastern white pine, pin oak.
67A: Harpster	Coralberry, maple-leaved arrowwood, redosier dogwood.	Black haw, cock's-spur hawthorn, nannyberry, silky dogwood, shadbush.	Eastern redcedar, northern white-cedar, tamarack, hackberry, red oak.	Baldcypress, green ash.	---
87A: Dickinson	American plum, black chokeberry, coralberry, maple-leaved arrowwood, gray dogwood.	Hazelnut, eastern redcedar, northern white-cedar, alternate-leaf dogwood, Iowa crab, nannyberry, shadbush.	Eastern white pine, green ash.	---	---
87B: Dickinson	American plum, black chokeberry, coralberry, maple-leaved arrowwood, gray dogwood.	Hazelnut, eastern redcedar, northern white-cedar, alternate-leaf dogwood, Iowa crab, nannyberry, shadbush.	Eastern white pine, green ash.	---	---

Table 10.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
87B2: Dickinson	American plum, black chokeberry, coralberry, maple-leaved arrowwood, gray dogwood.	Hazelnut, eastern redcedar, northern white-cedar, alternate-leaf dogwood, Iowa crab, nannyberry, shadbush.	Eastern white pine, green ash.	---	---
100A: Palms	Gray dogwood, maple-leaved arrowwood, redosier dogwood, black chokeberry.	Swamp holly, southern black haw, silky dogwood, shadbush, nannyberry.	Alternate-leaf dogwood, northern white-cedar, tamarack.	Baldcypress, eastern cottonwood.	---
103A: Houghton	Gray dogwood, maple-leaved arrowwood, redosier dogwood, black chokeberry.	Swamp holly, southern black haw, silky dogwood, shadbush, nannyberry.	Alternate-leaf dogwood, northern white-cedar, tamarack.	Baldcypress, eastern cottonwood.	---
104A: Virgil	Silky dogwood, coralberry, swamp holly, maple-leaved arrowwood, black chokeberry.	Iowa crab, American plum, shadbush, southern black haw.	Washington hawthorn, nannyberry, eastern redcedar, northern white-cedar, red oak, tamarack.	Norway spruce, hackberry, green ash, yellow-poplar, baldcypress.	Eastern cottonwood, eastern white pine, pin oak.
134A: Camden	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
134B: Camden	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
146A: Elliott	Silky dogwood, coralberry, swamp holly, maple-leaved arrowwood, black chokeberry.	Iowa crab, American plum, shadbush, southern black haw.	Washington hawthorn, nannyberry, eastern redcedar, northern white-cedar, red oak, tamarack.	Norway spruce, hackberry, green ash, yellow-poplar, baldcypress.	Eastern cottonwood, eastern white pine, pin oak.

Table 10.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
146B:					
Elliott	Silky dogwood, coralberry, swamp holly, maple-leaved arrowwood, black chokeberry.	Iowa crab, American plum, shadbush, southern black haw.	Washington hawthorn, nannyberry, eastern redcedar, northern white-cedar, red oak, tamarack.	Norway spruce, hackberry, green ash, yellow-poplar, baldcypress.	Eastern cottonwood, eastern white pine, pin oak.
148A:					
Proctor	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
148B:					
Proctor	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
149A:					
Brenton	Silky dogwood, coralberry, swamp holly, maple-leaved arrowwood, black chokeberry.	Iowa crab, American plum, shadbush, southern black haw.	Washington hawthorn, nannyberry, eastern redcedar, northern white-cedar, red oak, tamarack.	Norway spruce, hackberry, green ash, yellow-poplar, baldcypress.	Eastern cottonwood, eastern white pine, pin oak.
152A:					
Drummer	Coralberry, gray dogwood, maple-leaved arrowwood, black chokeberry.	American plum, black haw, Iowa crab, nannyberry, rough-leaf dogwood.	Shadbush, witch hazel, eastern redcedar, northern white-cedar, hackberry, tamarack.	Green ash, red oak, yellow-poplar, eastern white pine, Norway spruce, baldcypress.	Eastern cottonwood, pin oak.
153A:					
Pella	Coralberry, maple-leaved arrowwood, redosier dogwood.	Black haw, cock's-spur hawthorn, nannyberry, silky dogwood, shadbush.	Eastern redcedar, northern white-cedar, tamarack, hackberry, red oak.	Baldcypress, green ash.	---
153A+:					
Pella	Coralberry, maple-leaved arrowwood, redosier dogwood.	Black haw, cock's-spur hawthorn, nannyberry, silky dogwood, shadbush.	Eastern redcedar, northern white-cedar, tamarack, hackberry, red oak.	Baldcypress, green ash.	---
172A:					
Hoopeston	Silky dogwood, coralberry, swamp holly, maple-leaved arrowwood, black chokeberry.	Iowa crab, American plum, shadbush, southern black haw.	Washington hawthorn, nannyberry, eastern redcedar, northern white-cedar, red oak, tamarack.	Norway spruce, hackberry, green ash, yellow-poplar, baldcypress.	Eastern cottonwood, eastern white pine, pin oak.

Table 10.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
189A: Martinton	Silky dogwood, coralberry, swamp holly, maple-leaved arrowwood, black chokeberry.	Iowa crab, American plum, shadbush, southern black haw.	Washington hawthorn, nannyberry, eastern redcedar, northern white-cedar, red oak, tamarack.	Norway spruce, hackberry, green ash, yellow-poplar, baldcypress.	Eastern cottonwood, eastern white pine, pin oak.
197A: Troxel	Silky dogwood, coralberry, swamp holly, maple-leaved arrowwood, black chokeberry.	Iowa crab, American plum, shadbush, southern black haw.	Washington hawthorn, nannyberry, eastern redcedar, northern white-cedar, red oak, tamarack.	Norway spruce, hackberry, green ash, yellow-poplar, baldcypress.	Eastern cottonwood, eastern white pine, pin oak.
198A: Elburn	Silky dogwood, coralberry, swamp holly, maple-leaved arrowwood, black chokeberry.	Iowa crab, American plum, shadbush, southern black haw.	Washington hawthorn, nannyberry, eastern redcedar, northern white-cedar, red oak, tamarack.	Norway spruce, hackberry, green ash, yellow-poplar, baldcypress.	Eastern cottonwood, eastern white pine, pin oak.
206A: Thorp	Coralberry, gray dogwood, maple-leaved arrowwood, black chokeberry.	American plum, black haw, Iowa crab, nannyberry, rough-leaf dogwood.	Shadbush, witch hazel, eastern redcedar, northern white-cedar, hackberry, tamarack.	Green ash, red oak, yellow-poplar, eastern white pine, Norway spruce, baldcypress.	Eastern cottonwood, pin oak.
210A: Lena	Gray dogwood, maple-leaved arrowwood, redosier dogwood, black chokeberry.	Swamp holly, southern black haw, silky dogwood, shadbush, nannyberry.	Alternate-leaf dogwood, northern white-cedar, tamarack.	Baldcypress, eastern cottonwood.	---
219A: Millbrook	Silky dogwood, coralberry, swamp holly, maple-leaved arrowwood, black chokeberry.	Iowa crab, American plum, shadbush, southern black haw.	Washington hawthorn, nannyberry, eastern redcedar, northern white-cedar, red oak, tamarack.	Norway spruce, hackberry, green ash, yellow-poplar, baldcypress.	Eastern cottonwood, eastern white pine, pin oak.
221B: Parr	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.

Table 10.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
221C2:					
Parr	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
223B:					
Varna	Gray dogwood, maple-leaved arrowwood, redosier dogwood, black chokeberry.	Swamp holly, southern black haw, silky dogwood, shadbush, nannyberry.	Alternate-leaf dogwood, northern white-cedar, tamarack.	Baldcypress, eastern cottonwood.	---
223C2:					
Varna	Gray dogwood, maple-leaved arrowwood, redosier dogwood, black chokeberry.	Swamp holly, southern black haw, silky dogwood, shadbush, nannyberry.	Alternate-leaf dogwood, northern white-cedar, tamarack.	Baldcypress, eastern cottonwood.	---
223D2:					
Varna	Gray dogwood, maple-leaved arrowwood, redosier dogwood, black chokeberry.	Swamp holly, southern black haw, silky dogwood, shadbush, nannyberry.	Alternate-leaf dogwood, northern white-cedar, tamarack.	Baldcypress, eastern cottonwood.	---
228B:					
Nappanee	Gray dogwood, maple-leaved arrowwood, redosier dogwood, black chokeberry.	Swamp holly, southern black haw, silky dogwood, shadbush, nannyberry.	Alternate-leaf dogwood, northern white-cedar, tamarack.	Baldcypress, eastern cottonwood.	---
232A:					
Ashkum	Coralberry, gray dogwood, maple-leaved arrowwood, black chokeberry.	American plum, black haw, Iowa crab, nannyberry, rough-leaf dogwood.	Shadbush, witch hazel, eastern redcedar, northern white-cedar, hackberry, tamarack.	Green ash, red oak, yellow-poplar, eastern white pine, Norway spruce, baldcypress.	Eastern cottonwood, pin oak.
290A:					
Warsaw	American plum, black chokeberry, coralberry, maple-leaved arrowwood, gray dogwood.	Hazelnut, eastern redcedar, northern white-cedar, alternate-leaf dogwood, Iowa crab, nannyberry, shadbush.	Eastern white pine, green ash.	---	---

Table 10.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
290B: Warsaw	American plum, black chokeberry, coralberry, maple-leaved arrowwood, gray dogwood.	Hazelnut, eastern redcedar, northern white-cedar, alternate-leaf dogwood, Iowa crab, nannyberry, shadbush.	Eastern white pine, green ash.	---	---
290C2: Warsaw	American plum, black chokeberry, coralberry, maple-leaved arrowwood, gray dogwood.	Hazelnut, eastern redcedar, northern white-cedar, alternate-leaf dogwood, Iowa crab, nannyberry, shadbush.	Eastern white pine, green ash.	---	---
297A: Ringwood	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
297B: Ringwood	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
298B: Beecher	Gray dogwood, maple-leaved arrowwood, redosier dogwood, black chokeberry.	Swamp holly, southern black haw, silky dogwood, shadbush, nannyberry.	Alternate-leaf dogwood, northern white-cedar, tamarack.	Baldcypress, eastern cottonwood.	---
310B: McHenry	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
318A: Lorenzo	American plum, black chokeberry, coralberry, maple-leaved arrowwood, gray dogwood.	Hazelnut, eastern redcedar, northern white-cedar, alternate-leaf dogwood, Iowa crab, nannyberry, shadbush.	Eastern white pine, green ash.	---	---

Table 10.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
318B:					
Lorenzo	American plum, black chokeberry, coralberry, maple-leaved arrowwood, gray dogwood.	Hazelnut, eastern redcedar, northern white-cedar, alternate-leaf dogwood, Iowa crab, nannyberry, shadbush.	Eastern white pine, green ash.	---	---
318C2:					
Lorenzo	American plum, black chokeberry, coralberry, maple-leaved arrowwood, gray dogwood.	Hazelnut, eastern redcedar, northern white-cedar, alternate-leaf dogwood, Iowa crab, nannyberry, shadbush.	Eastern white pine, green ash.	---	---
318D2:					
Lorenzo	American plum, black chokeberry, coralberry, maple-leaved arrowwood, gray dogwood.	Hazelnut, eastern redcedar, northern white-cedar, alternate-leaf dogwood, Iowa crab, nannyberry, shadbush.	Eastern white pine, green ash.	---	---
323B:					
Casco	American plum, black chokeberry, coralberry, maple-leaved arrowwood, gray dogwood.	Hazelnut, eastern redcedar, northern white-cedar, alternate-leaf dogwood, Iowa crab, nannyberry, shadbush.	Eastern white pine, green ash.	---	---
323C2:					
Casco	American plum, black chokeberry, coralberry, maple-leaved arrowwood, gray dogwood.	Hazelnut, eastern redcedar, northern white-cedar, alternate-leaf dogwood, Iowa crab, nannyberry, shadbush.	Eastern white pine, green ash.	---	---
323C3:					
Casco	American plum, black chokeberry, coralberry, maple-leaved arrowwood, gray dogwood.	Hazelnut, eastern redcedar, northern white-cedar, alternate-leaf dogwood, Iowa crab, nannyberry, shadbush.	Eastern white pine, green ash.	---	---

Table 10.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
323D2:					
Casco	American plum, black chokeberry, coralberry, maple-leaved arrowwood, gray dogwood.	Hazelnut, eastern redcedar, northern white-cedar, alternate-leaf dogwood, Iowa crab, nannyberry, shadbush.	Eastern white pine, green ash.	---	---
323D3:					
Casco	American plum, black chokeberry, coralberry, maple-leaved arrowwood, gray dogwood.	Hazelnut, eastern redcedar, northern white-cedar, alternate-leaf dogwood, Iowa crab, nannyberry, shadbush.	Eastern white pine, green ash.	---	---
325A:					
Dresden	American plum, black chokeberry, coralberry, maple-leaved arrowwood, gray dogwood.	Hazelnut, eastern redcedar, northern white-cedar, alternate-leaf dogwood, Iowa crab, nannyberry, shadbush.	Eastern white pine, green ash.	---	---
325B:					
Dresden	American plum, black chokeberry, coralberry, maple-leaved arrowwood, gray dogwood.	Hazelnut, eastern redcedar, northern white-cedar, alternate-leaf dogwood, Iowa crab, nannyberry, shadbush.	Eastern white pine, green ash.	---	---
327A:					
Fox	American plum, black chokeberry, coralberry, maple-leaved arrowwood, gray dogwood.	Hazelnut, eastern redcedar, northern white-cedar, alternate-leaf dogwood, Iowa crab, nannyberry, shadbush.	Eastern white pine, green ash.	---	---
327B:					
Fox	American plum, black chokeberry, coralberry, maple-leaved arrowwood, gray dogwood.	Hazelnut, eastern redcedar, northern white-cedar, alternate-leaf dogwood, Iowa crab, nannyberry, shadbush.	Eastern white pine, green ash.	---	---

Table 10.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
327C2:					
Fox	American plum, black chokeberry, coralberry, maple-leaved arrowwood, gray dogwood.	Hazelnut, eastern redcedar, northern white-cedar, alternate-leaf dogwood, Iowa crab, nannyberry, shadbush.	Eastern white pine, green ash.	---	---
327D2:					
Fox	American plum, black chokeberry, coralberry, maple-leaved arrowwood, gray dogwood.	Hazelnut, eastern redcedar, northern white-cedar, alternate-leaf dogwood, Iowa crab, nannyberry, shadbush.	Eastern white pine, green ash.	---	---
329A:					
Will	Coralberry, gray dogwood, maple-leaved arrowwood, black chokeberry.	American plum, black haw, Iowa crab, nannyberry, rough-leaf dogwood.	Shadbush, witch hazel, eastern redcedar, northern white-cedar, hackberry, tamarack.	Green ash, red oak, yellow-poplar, eastern white pine, Norway spruce, baldcypress.	Eastern cottonwood, pin oak.
330A:					
Peotone	Coralberry, gray dogwood, maple-leaved arrowwood, black chokeberry.	American plum, black haw, Iowa crab, nannyberry, rough-leaf dogwood.	Shadbush, witch hazel, eastern redcedar, northern white-cedar, hackberry, tamarack.	Green ash, red oak, yellow-poplar, eastern white pine, Norway spruce, baldcypress.	Eastern cottonwood, pin oak.
343A:					
Kane	Silky dogwood, coralberry, swamp holly, maple-leaved arrowwood, black chokeberry.	Iowa crab, American plum, shadbush, southern black haw.	Washington hawthorn, nannyberry, eastern redcedar, northern white-cedar, red oak, tamarack.	Norway spruce, hackberry, green ash, yellow-poplar, baldcypress.	Eastern cottonwood, eastern white pine, pin oak.
344A:					
Harvard	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
344B:					
Harvard	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.

Table 10.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
361B:					
Kidder	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
361C:					
Kidder	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
361C2:					
Kidder	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
361C3:					
Kidder	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
361D2:					
Kidder	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
361D3:					
Kidder	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
361E:					
Kidder	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
361E2:					
Kidder	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.

Table 10.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
361F:					
Kidder	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
363B:					
Griswold	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
363C2:					
Griswold	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
363D2:					
Griswold	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
369A:					
Waupecan	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
369B:					
Waupecan	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
379A:					
Dakota	American plum, black chokeberry, coralberry, maple-leaved arrowwood, gray dogwood.	Hazelnut, eastern redcedar, northern white-cedar, alternate-leaf dogwood, Iowa crab, nannyberry, shadbush.	Eastern white pine, green ash.	---	---

Table 10.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
379B:					
Dakota	American plum, black chokeberry, coralberry, maple-leaved arrowwood, gray dogwood.	Hazelnut, eastern redcedar, northern white-cedar, alternate-leaf dogwood, Iowa crab, nannyberry, shadbush.	Eastern white pine, green ash.	---	---
488A:					
Hooppole	Coralberry, maple-leaved arrowwood, redosier dogwood.	Black haw, cock's-spur hawthorn, nannyberry, silky dogwood, shadbush.	Eastern redcedar, northern white-cedar, tamarack, hackberry, red oak.	Baldcypress, green ash.	---
503B:					
Rockton	Siberian peashrub	Silky dogwood, Washington hawthorn, autumn-olive, eastern redcedar, Amur honeysuckle, radiant crabapple, lilac.	Jack pine, Austrian pine, red pine, eastern white pine.		
523A:					
Dunham	Coralberry, gray dogwood, maple-leaved arrowwood, black chokeberry.	American plum, black haw, Iowa crab, nannyberry, rough-leaf dogwood.	Shadbush, witch hazel, eastern redcedar, northern white-cedar, hackberry, tamarack.	Green ash, red oak, yellow-poplar, eastern white pine, Norway spruce, baldcypress.	Eastern cottonwood, pin oak.
526A:					
Grundelein	Silky dogwood, coralberry, swamp holly, maple-leaved arrowwood, black chokeberry.	Iowa crab, American plum, shadbush, southern black haw.	Washington hawthorn, nannyberry, eastern redcedar, northern white-cedar, red oak, tamarack.	Norway spruce, hackberry, green ash, yellow-poplar, baldcypress.	Eastern cottonwood, eastern white pine, pin oak.
527B:					
Kidami	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
527C:					
Kidami	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.

Table 10.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
527C2:					
Kidami----------	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
527D:					
Kidami----------	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
527D2:					
Kidami----------	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
527D3:					
Kidami----------	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
528A:					
Lahoguess-------	Silky dogwood, coralberry, swamp holly, maple-leaved arrowwood, black chokeberry.	Iowa crab, American plum, shadbush, southern black haw.	Washington hawthorn, nannyberry, eastern redcedar, northern white-cedar, red oak, tamarack.	Norway spruce, hackberry, green ash, yellow-poplar, baldcypress.	Eastern cottonwood, eastern white pine, pin oak.
530B:					
Ozaukee---------	Gray dogwood, maple-leaved arrowwood, redosier dogwood, black chokeberry.	Swamp holly, southern black haw, silky dogwood, shadbush, nannyberry.	Alternate-leaf dogwood, northern white-cedar, tamarack.	Baldcypress, eastern cottonwood.	---
530C2:					
Ozaukee---------	Gray dogwood, maple-leaved arrowwood, redosier dogwood, black chokeberry.	Swamp holly, southern black haw, silky dogwood, shadbush, nannyberry.	Alternate-leaf dogwood, northern white-cedar, tamarack.	Baldcypress, eastern cottonwood.	---
530C3:					
Ozaukee---------	Gray dogwood, maple-leaved arrowwood, redosier dogwood, black chokeberry.	Swamp holly, southern black haw, silky dogwood, shadbush, nannyberry.	Alternate-leaf dogwood, northern white-cedar, tamarack.	Baldcypress, eastern cottonwood.	---

Table 10.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
530D2:					
Ozaukee	Gray dogwood, maple-leaved arrowwood, redosier dogwood, black chokeberry.	Swamp holly, southern black haw, silky dogwood, shadbush, nannyberry.	Alternate-leaf dogwood, northern white-cedar, tamarack.	Baldcypress, eastern cottonwood.	---
530D3:					
Ozaukee	Gray dogwood, maple-leaved arrowwood, redosier dogwood, black chokeberry.	Swamp holly, southern black haw, silky dogwood, shadbush, nannyberry.	Alternate-leaf dogwood, northern white-cedar, tamarack.	Baldcypress, eastern cottonwood.	---
530E:					
Ozaukee	Gray dogwood, maple-leaved arrowwood, redosier dogwood, black chokeberry.	Swamp holly, southern black haw, silky dogwood, shadbush, nannyberry.	Alternate-leaf dogwood, northern white-cedar, tamarack.	Baldcypress, eastern cottonwood.	---
543B:					
Piscasaw	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
544A:					
Torox	Silky dogwood, coralberry, swamp holly, maple-leaved arrowwood, black chokeberry.	Iowa crab, American plum, shadbush, southern black haw.	Washington hawthorn, nannyberry, eastern redcedar, northern white-cedar, red oak, tamarack.	Norway spruce, hackberry, green ash, yellow-poplar, baldcypress.	Eastern cottonwood, eastern white pine, pin oak.
557A:					
Millstream	Silky dogwood, coralberry, swamp holly, maple-leaved arrowwood, black chokeberry.	Iowa crab, American plum, shadbush, southern black haw.	Washington hawthorn, nannyberry, eastern redcedar, northern white-cedar, red oak, tamarack.	Norway spruce, hackberry, green ash, yellow-poplar, baldcypress.	Eastern cottonwood, eastern white pine, pin oak.
570A:					
Martinsville	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.

Table 10.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
570B: Martinsville	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
570C2: Martinsville	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
618E: Senachwine	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
618F: Senachwine	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
624B: Caprell	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
624C2: Caprell	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
624D2: Caprell	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
624E: Caprell	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.

Table 10.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
625A:					
Geryune	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
625B:					
Geryune	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
626A:					
Kish	Coralberry, maple-leaved arrowwood, redosier dogwood.	Black haw, cock's-spur hawthorn, nannyberry, silky dogwood, shadbush.	Eastern redcedar, northern white-cedar, tamarack, hackberry, red oak.	Baldcypress, green ash.	---
635A:					
Lismod	Silky dogwood, coralberry, swamp holly, maple-leaved arrowwood, black chokeberry.	Iowa crab, American plum, shadbush, southern black haw.	Washington hawthorn, nannyberry, eastern redcedar, northern white-cedar, red oak, tamarack.	Norway spruce, hackberry, green ash, yellow-poplar, baldcypress.	Eastern cottonwood, eastern white pine, pin oak.
635B:					
Lismod	Silky dogwood, coralberry, swamp holly, maple-leaved arrowwood, black chokeberry.	Iowa crab, American plum, shadbush, southern black haw.	Washington hawthorn, nannyberry, eastern redcedar, northern white-cedar, red oak, tamarack.	Norway spruce, hackberry, green ash, yellow-poplar, baldcypress.	Eastern cottonwood, eastern white pine, pin oak.
636B:					
Parmod	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
656B:					
Octagon	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
656C2:					
Octagon	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.

Table 10.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
791A:					
Rush	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
791B:					
Rush	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
791C2:					
Rush	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
792A:					
Bowes	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
792B:					
Bowes	Coralberry, gray dogwood, maple-leaved arrowwood, redosier dogwood, swamp holly.	Rough-leaf dogwood, American plum, hazelnut, Iowa crab, black haw.	Eastern redcedar, northern white-cedar, nannyberry, shadbush, tamarack.	Norway spruce, baldcypress, hackberry, yellow-poplar, green ash.	Eastern white pine, pin oak, eastern cottonwood.
802B:					
Orthents, loamy	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, blue spruce, northern white-cedar.	Norway spruce, Austrian pine.	Eastern white pine, pin oak.
969E2:					
Casco	American plum, black chokeberry, coralberry, maple-leaved arrowwood, gray dogwood.	Hazelnut, eastern redcedar, northern white-cedar, alternate-leaf dogwood, Iowa crab, nannyberry, shadbush.	Eastern white pine, green ash.	---	---
Rodman	American plum, black chokeberry, black haw, gray dogwood, maple-leaved arrowwood.	Eastern redcedar, eastern white pine, Iowa crab, shadbush, nannyberry, cock's-spur hawthorn.	Thornless honeylocust, black locust.	---	---

Table 10.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
969F:					
Casco	American plum, black chokeberry, coralberry, maple-leaved arrowwood, gray dogwood.	Hazelnut, eastern redcedar, northern white-cedar, alternate-leaf dogwood, Iowa crab, nannyberry, shadbush.	Eastern white pine, green ash.	---	---
Rodman	American plum, black chokeberry, black haw, gray dogwood, maple-leaved arrowwood.	Eastern redcedar, eastern white pine, Iowa crab, shadbush, nannyberry, cock's-spur hawthorn.	Thornless honeylocust, black locust.	---	---
1067A:					
Harpster	Coralberry, maple-leaved arrowwood, redosier dogwood.	Black haw, cock's-spur hawthorn, nannyberry, silky dogwood, shadbush.	Eastern redcedar, northern white-cedar, tamarack, hackberry, red oak.	Baldcypress, green ash.	---
1082A:					
Millington	Coralberry, maple-leaved arrowwood, redosier dogwood.	Black haw, cock's-spur hawthorn, nannyberry, silky dogwood, shadbush.	Eastern redcedar, northern white-cedar, tamarack, hackberry, red oak.	Baldcypress, green ash.	---
1100A:					
Palms	Gray dogwood, maple-leaved arrowwood, redosier dogwood, black chokeberry.	Swamp holly, southern black haw, silky dogwood, shadbush, nannyberry.	Alternate-leaf dogwood, northern white-cedar, tamarack.	Baldcypress, eastern cottonwood.	---
1103A:					
Houghton	Gray dogwood, maple-leaved arrowwood, redosier dogwood, black chokeberry.	Swamp holly, southern black haw, silky dogwood, shadbush, nannyberry.	Alternate-leaf dogwood, northern white-cedar, tamarack.	Baldcypress, eastern cottonwood.	---
1153A:					
Pella	Coralberry, maple-leaved arrowwood, redosier dogwood.	Black haw, cock's-spur hawthorn, nannyberry, silky dogwood, shadbush.	Eastern redcedar, northern white-cedar, tamarack, hackberry, red oak.	Baldcypress, green ash.	---
1206A:					
Thorp	---	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	White fir, Washington hawthorn, Norway spruce, Austrian pine, blue spruce, northern white-cedar.	Eastern white pine	Pin oak.

Table 10.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
1210A: Lena	Gray dogwood, maple-leaved arrowwood, redosier dogwood, black chokeberry.	Swamp holly, southern black haw, silky dogwood, shadbush, nannyberry.	Alternate-leaf dogwood, northern white-cedar, tamarack.	Baldcypress, eastern cottonwood.	---
1330A: Peotone	Coralberry, gray dogwood, maple-leaved arrowwood, black chokeberry.	American plum, black haw, Iowa crab, nannyberry, rough-leaf dogwood.	Shadbush, witch hazel, eastern redcedar, northern white-cedar, hackberry, tamarack.	Green ash, red oak, yellow-poplar, eastern white pine, Norway spruce, baldcypress.	Eastern cottonwood, pin oak.
1488A: Hooppole	Coralberry, maple-leaved arrowwood, redosier dogwood.	Black haw, cock's-spur hawthorn, nannyberry, silky dogwood, shadbush.	Eastern redcedar, northern white-cedar, tamarack, hackberry, red oak.	Baldcypress, green ash.	---
1626A: Kish	Coralberry, maple-leaved arrowwood, redosier dogwood.	Black haw, cock's-spur hawthorn, nannyberry, silky dogwood, shadbush.	Eastern redcedar, northern white-cedar, tamarack, hackberry, red oak.	Baldcypress, green ash.	---
1776A: Comfrey	Coralberry, gray dogwood, maple-leaved arrowwood, black chokeberry.	American plum, black haw, Iowa crab, nannyberry, rough-leaf dogwood.	Shadbush, witch hazel, eastern redcedar, northern white-cedar, hackberry, tamarack.	Green ash, red oak, yellow-poplar, eastern white pine, Norway spruce, baldcypress.	Eastern cottonwood, pin oak.
8082A: Millington	Coralberry, maple-leaved arrowwood, redosier dogwood.	Black haw, cock's-spur hawthorn, nannyberry, silky dogwood, shadbush.	Eastern redcedar, northern white-cedar, tamarack, hackberry, red oak.	Baldcypress, green ash.	---
8776A: Comfrey	Coralberry, gray dogwood, maple-leaved arrowwood, black chokeberry.	American plum, black haw, Iowa crab, nannyberry, rough-leaf dogwood.	Shadbush, witch hazel, eastern redcedar, northern white-cedar, hackberry, tamarack.	Green ash, red oak, yellow-poplar, eastern white pine, Norway spruce, baldcypress.	Eastern cottonwood, pin oak.

Table 11.--Forestland Management and Productivity

(Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available)

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Suggested trees to plant
62A:										
Herbert	4A	Slight	Slight	Slight	Slight	Moderate	White oak	80	4	Bur oak, green ash, black walnut, eastern white pine, hackberry, swamp white oak, eastern redcedar.
							Black walnut	---	---	
							Northern red oak	---	---	
							Shagbark hickory	---	---	
100A:										
Palms	2W	Slight	Severe	Severe	Severe	Severe	Red maple	55	2	Swamp white oak, bur oak, green ash, hackberry, cottonwood, silver maple, sycamore.
							Silver maple	80	2	
							White ash	---	---	
							Black ash	---	---	
							Quaking aspen	---	---	
							Tamarack	61	4	
							Northern white-cedar	---	---	
103A:										
Houghton	2W	Slight	Severe	Severe	Severe	Severe	Red maple	56	2	Swamp white oak, bur oak, green ash, hackberry, cottonwood, silver maple, sycamore.
							Silver maple	82	2	
							White ash	56	3	
							Green ash	---	---	
							Tamarack	52	3	
							Quaking aspen	60	4	
							Northern white-cedar	37	4	
104A:										
Virgil	2A	Slight	Slight	Slight	Slight	Moderate	Silver maple	70	2	Bur oak, green ash, black walnut, white pine, hackberry, eastern redcedar.
							American elm	---	---	
							Shagbark hickory	---	---	
134A:										
Camden	3A	Slight	Slight	Slight	Slight	Moderate	Sugar maple	60	3	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							Northern red oak	69	4	
							Shagbark hickory	---	---	
134B:										
Camden	3A	Slight	Slight	Slight	Slight	Moderate	Sugar maple	60	3	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							Northern red oak	69	4	
							Shagbark hickory	---	---	

See footnote at end of table.

Table 11.--Forestland Management and Productivity--Continued

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Productivity class*	Suggested trees to plant
153A:										
Pella	3W	Slight	Severe	Moderate	Moderate	Severe	Northern white-cedar	33	3	Swamp white oak, bur oak, green ash, hackberry, eastern white pine, cottonwood, silver maple, sycamore.
							White ash	---	---	
							American elm	---	---	
							Silver maple	---	---	
153A+:										
Pella	3W	Slight	Severe	Moderate	Moderate	Severe	Northern white-cedar	33	3	Swamp white oak, bur oak, green ash, hackberry, cottonwood, silver maple, sycamore.
							White ash	---	---	
							American elm	---	---	
							Silver maple	---	---	
219A:										
Millbrook	4A	Slight	Slight	Slight	Slight	Moderate	Northern red oak	80	4	Bur oak, green ash, black walnut, eastern white pine, hackberry, swamp white oak, eastern redcedar.
							Black walnut	---	---	
							White oak	80	4	
							Yellow-poplar	90	6	
							Shagbark hickory	---	---	
228B:										
Nappanee	4C	Slight	Severe	Slight	Moderate	Severe	Northern red oak	66	4	Bur oak, green ash, black walnut, eastern white pine, hackberry, swamp white oak, eastern redcedar.
							American beech	---	---	
							White ash	---	---	
							Blackgum	---	---	
							American sycamore	---	---	
							Swamp white oak	---	---	
							Pin oak	---	---	
							Red maple	---	---	
							Shagbark hickory	---	---	
298B:										
Beecher	4C	Slight	Slight	Slight	Severe	Slight	Northern red oak	65	4	Bur oak, green ash, black walnut, eastern white pine, hackberry, swamp white oak, eastern redcedar.
							Black cherry	---	---	
							White oak	---	---	
							Northern pin oak	---	---	
							Bur oak	---	---	
							Shagbark hickory	---	---	
310B:										
McHenry	4A	Slight	Slight	Slight	Slight	Moderate	Northern red oak	65	4	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							White oak	70	4	
							White ash	---	---	
							Shagbark hickory	---	---	

See footnote at end of table.

Table 11.--Forestland Management and Productivity--Continued

Map symbol and soil name	Ordination symbol	Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	Suggested trees to plant
323B:										
Casco	3S	Slight	Moderate	Slight	Slight	Moderate	Northern red oak	55	3	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							Black oak	---	---	
							Shagbark hickory	---	---	
323C2:										
Casco	3S	Slight	Moderate	Slight	Slight	Moderate	Northern red oak	55	3	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							Black oak	---	---	
							Shagbark hickory	---	---	
323C3:										
Casco	3S	Slight	Moderate	Moderate	Slight	Slight	Northern red oak	55	3	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							Black oak	---	---	
							Shagbark hickory	---	---	
323D2:										
Casco	3S	Slight	Moderate	Slight	Slight	Moderate	Northern red oak	55	3	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							Black oak	---	---	
							Shagbark hickory	---	---	
323D3:										
Casco	3S	Slight	Moderate	Moderate	Slight	Slight	Northern red oak	55	3	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							Black oak	---	---	
							Shagbark hickory	---	---	
325A:										
Dresden	4A	Slight	Slight	Slight	Slight	Moderate	Northern red oak	70	4	Black walnut, northern red oak, white pine, white ash, bur oak, sugar maple, white oak.
							White ash	---	---	
							Black cherry	---	---	
							White oak	---	---	
							Sugar maple	---	---	
							Black oak	---	---	
							American basswood	---	---	
							Shagbark hickory	---	---	

See footnote at end of table.

Table 11.--Forestland Management and Productivity--Continued

Map symbol and soil name	Ordination symbol	Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	Suggested trees to plant
325B:										
Dresden	4A	Slight	Slight	Slight	Slight	Moderate	Northern red oak	70	4	Black walnut, northern red oak, white pine, white ash, bur oak, sugar maple, white oak.
							White ash	---	---	
							Black cherry	---	---	
							White oak	---	---	
							Sugar maple	---	---	
							Black oak	---	---	
							American basswood	---	---	
							Shagbark hickory	---	---	
327A:										
Fox	4A	Slight	Slight	Slight	Slight	Moderate	Northern red oak	65	4	Black walnut, northern red oak, white pine, white ash, bur oak, sugar maple, white oak.
							White ash	---	---	
							Black cherry	---	---	
							White oak	---	---	
							Sugar maple	---	---	
							Shagbark hickory	---	---	
327B:										
Fox	4A	Slight	Slight	Slight	Slight	Moderate	Northern red oak	65	4	Black walnut, northern red oak, white pine, white ash, bur oak, sugar maple, white oak.
							White ash	---	---	
							Black cherry	---	---	
							White oak	---	---	
							Sugar maple	---	---	
							Shagbark hickory	---	---	
327C2:										
Fox	4A	Slight	Slight	Slight	Slight	Moderate	Northern red oak	65	4	Black walnut, northern red oak, white pine, white ash, bur oak, sugar maple, white oak.
							White ash	---	---	
							Black cherry	---	---	
							White oak	---	---	
							Sugar maple	---	---	
							Shagbark hickory	---	---	
327D2:										
Fox	4A	Slight	Slight	Slight	Slight	Moderate	Northern red oak	65	4	Black walnut, northern red oak, white pine, white ash, bur oak, sugar maple, white oak.
							White ash	---	---	
							Black cherry	---	---	
							White oak	---	---	
							Sugar maple	---	---	
							Shagbark hickory	---	---	
329A:										
Will	4W	Slight	Severe	Severe	Slight	Severe	White ash	60	4	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							Red maple	---	---	
							Swamp white oak	---	---	

See footnote at end of table.

Table 11.--Forestland Management and Productivity--Continued

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Productivity class*	Suggested trees to plant
344A:										
Harvard-------	5A	Slight	Slight	Slight	Slight	Severe	Northern red oak----	90	5	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							White oak-----------	90	5	
							Shagbark hickory----	---	---	
							Yellow-poplar-------	98	7	
344B:										
Harvard-------	5A	Slight	Slight	Slight	Slight	Severe	Northern red oak----	90	5	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							White oak-----------	90	5	
							Shagbark hickory----	---	---	
							Yellow-poplar-------	98	7	
361B:										
Kidder--------	4A	Slight	Slight	Slight	Slight	Moderate	Northern red oak----	63	4	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							White ash-----------	---	---	
							White oak-----------	---	---	
							Shagbark hickory----	---	---	
361C:										
Kidder--------	4A	Slight	Slight	Slight	Slight	Moderate	Northern red oak----	63	4	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							White ash-----------	---	---	
							White oak-----------	---	---	
							Shagbark hickory----	---	---	
361C2:										
Kidder--------	4A	Slight	Slight	Slight	Slight	Moderate	Northern red oak----	63	4	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							White ash-----------	---	---	
							White oak-----------	---	---	
							Shagbark hickory----	---	---	
361C3:										
Kidder--------	4A	Slight	Slight	Slight	Slight	Moderate	Northern red oak----	63	4	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							White ash-----------	---	---	
							White oak-----------	---	---	
							Shagbark hickory----	---	---	

See footnote at end of table.

Table 11.--Forestland Management and Productivity--Continued

Map symbol and soil name	Ordi-nation symbol	Management concerns: Erosion hazard	Equip-ment limita-tion	Seedling mortal-ity	Wind-throw hazard	Plant competi-tion	Potential productivity: Common trees	Site index	Produc-tivity class*	Suggested trees to plant
361D2:										
Kidder--------	4A	Slight	Slight	Slight	Slight	Moderate	Northern red oak----	63	4	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							White ash-----------	---	---	
							White oak-----------	---	---	
							Shagbark hickory----	---	---	
361D3:										
Kidder--------	4A	Slight	Slight	Slight	Slight	Moderate	Northern red oak----	63	4	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							White ash-----------	---	---	
							White oak-----------	---	---	
							Shagbark hickory----	---	---	
361E:										
Kidder--------	4R	Moderate	Moderate	Moderate	Slight	Moderate	Northern red oak----	63	4	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							White ash-----------	---	---	
							White oak-----------	---	---	
							Shagbark hickory----	---	---	
361E2:										
Kidder--------	4R	Moderate	Moderate	Moderate	Slight	Moderate	Northern red oak----	63	4	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							White ash-----------	---	---	
							White oak-----------	---	---	
							Shagbark hickory----	---	---	
361F:										
Kidder--------	4R	Moderate	Moderate	Moderate	Slight	Moderate	Northern red oak----	63	4	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							White ash-----------	---	---	
							White oak-----------	---	---	
							Shagbark hickory----	---	---	
527B:										
Kidami--------	4A	Slight	Slight	Slight	Slight	Moderate	Northern red oak----	69	4	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							American beech------	---	---	
							White oak-----------	---	---	
							Sugar maple---------	---	---	
							White ash-----------	---	---	
							Shagbark hickory----	---	---	

See footnote at end of table.

Table 11.--Forestland Management and Productivity--Continued

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Productivity class*	Suggested trees to plant
527C:										
Kidami	4A	Slight	Slight	Slight	Slight	Moderate	Northern red oak	69	4	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							American beech	---	---	
							White oak	---	---	
							Sugar maple	---	---	
							White ash	---	---	
							Shagbark hickory	---	---	
527C2:										
Kidami	4A	Slight	Slight	Slight	Slight	Moderate	Northern red oak	69	4	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							American beech	---	---	
							White oak	---	---	
							Sugar maple	---	---	
							White ash	---	---	
							Shagbark hickory	---	---	
527D:										
Kidami	4A	Slight	Slight	Slight	Slight	Moderate	Northern red oak	69	4	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							American beech	---	---	
							White oak	---	---	
							Sugar maple	---	---	
							White ash	---	---	
							Shagbark hickory	---	---	
527D2:										
Kidami	4A	Slight	Slight	Slight	Slight	Moderate	Northern red oak	69	4	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							American beech	---	---	
							White oak	---	---	
							Sugar maple	---	---	
							White ash	---	---	
							Shagbark hickory	---	---	
527D3:										
Kidami	4A	Slight	Slight	Slight	Slight	Moderate	Northern red oak	69	4	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							American beech	---	---	
							White oak	---	---	
							Sugar maple	---	---	
							White ash	---	---	
							Shagbark hickory	---	---	
530B:										
Ozaukee	4D	Slight	Slight	Moderate	Severe	Severe	Northern red oak	66	4	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							White ash	---	---	
							Sugar maple	---	---	
							American basswood	---	---	
							Shagbark hickory	---	---	

See footnote at end of table.

Table 11.--Forestland Management and Productivity--Continued

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Productivity class*	Suggested trees to plant
530C2:										
Ozaukee-------	4D	Slight	Slight	Moderate	Severe	Severe	Northern red oak----	66	4	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							White ash-----------	---	---	
							Sugar maple---------	---	---	
							American basswood---	---	---	
							Shagbark hickory----	---	---	
530C3:										
Ozaukee-------	4D	Slight	Slight	Moderate	Severe	Severe	Northern red oak----	66	4	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							White ash-----------	---	---	
							Sugar maple---------	---	---	
							American basswood---	---	---	
							Shagbark hickory----	---	---	
530D2:										
Ozaukee-------	4D	Slight	Slight	Moderate	Severe	Severe	Northern red oak----	66	4	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							White ash-----------	---	---	
							Sugar maple---------	---	---	
							American basswood---	---	---	
							Shagbark hickory----	---	---	
530D3:										
Ozaukee-------	4D	Slight	Slight	Moderate	Severe	Severe	Northern red oak----	66	4	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							White ash-----------	---	---	
							Sugar maple---------	---	---	
							American basswood---	---	---	
							Shagbark hickory----	---	---	
530E:										
Ozaukee-------	4R	Moderate	Moderate	Moderate	Severe	Severe	Northern red oak----	66	4	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							White ash-----------	---	---	
							Sugar maple---------	---	---	
							American basswood---	---	---	
							Shagbark hickory----	---	---	
543B:										
Piscasaw------	5A	Slight	Slight	Slight	Slight	Severe	Black oak-----------	84	5	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							Yellow-poplar-------	99	7	
							Shagbark hickory----	---	---	

See footnote at end of table.

Table 11.--Forestland Management and Productivity--Continued

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Productivity class*	Suggested trees to plant
544A:										
Torox	5A	Slight	Slight	Slight	Slight	Severe	Black oak	84	5	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							Yellow-poplar	99	7	
							Shagbark hickory	---	---	
545A:										
Windere	4D	Slight	Slight	Moderate	Severe	Severe	Northern red oak	66	4	Black walnut, northern red oak, eastern white pine, white ash, bur oak, white oak.
							White ash	---	---	
							Sugar maple	---	---	
							American basswood	---	---	
							Shagbark hickory	---	---	
545B:										
Windere	4D	Slight	Slight	Moderate	Severe	Severe	Northern red oak	66	4	Black walnut, northern red oak, eastern white pine, white ash, bur oak, white oak.
							White ash	---	---	
							Sugar maple	---	---	
							American basswood	---	---	
							Shagbark hickory	---	---	
557A:										
Millstream	4A	Slight	Slight	Slight	Slight	Moderate	Northern red oak	80	4	Bur oak, green ash, black walnut, eastern white pine, hackberry, swamp white oak, eastern redcedar.
							Black walnut	---	---	
							White oak	80	4	
							Yellow-poplar	---	---	
							Shagbark hickory	---	---	
570A:										
Martinsville	4A	Slight	Slight	Slight	Slight	Severe	White oak	80	4	Black walnut, northern red oak, eastern white pine, white ash, bur oak, white oak.
							Yellow-poplar	98	7	
							Sweetgum	76	5	
							Shagbark hickory	---	---	
570B:										
Martinsville	4A	Slight	Slight	Slight	Slight	Severe	White oak	80	4	Black walnut, northern red oak, eastern white pine, white ash, bur oak, white oak.
							Yellow-poplar	98	7	
							Sweetgum	76	5	
							Shagbark hickory	---	---	
570C2:										
Martinsville	4A	Slight	Slight	Slight	Slight	Severe	White oak	80	4	Black walnut, northern red oak, eastern white pine, white ash, bur oak, white oak.
							Sweetgum	76	5	
							Yellow-poplar	98	7	
							Shagbark hickory	---	---	

See footnote at end of table.

Table 11.--Forestland Management and Productivity--Continued

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Suggested trees to plant
618E:										
Senachwine	4A	Slight	Slight	Slight	Slight	Moderate	Northern red oak	69	4	Black walnut, northern red oak, eastern white pine, white ash, bur oak, white oak.
							American beech	---	---	
							White oak	---	---	
							Sugar maple	---	---	
							White ash	---	---	
							Shagbark hickory	---	---	
618F:										
Senachwine	4R	Moderate	Moderate	Slight	Slight	Moderate	Northern red oak	69	4	Black walnut, northern red oak, eastern white pine, white ash, bur oak, white oak.
							American beech	---	---	
							White oak	---	---	
							Sugar maple	---	---	
							White ash	---	---	
							Shagbark hickory	---	---	
624B:										
Caprell	4A	Slight	Slight	Slight	Slight	Moderate	Northern red oak	69	4	Black walnut, northern red oak, eastern white pine, white ash, bur oak, white oak.
							American beech	---	---	
							White oak	---	---	
							Sugar maple	---	---	
							White ash	---	---	
							Shagbark hickory	---	---	
624C2:										
Caprell	4A	Slight	Slight	Slight	Slight	Moderate	Northern red oak	69	4	Black walnut, northern red oak, eastern white pine, white ash, bur oak, white oak.
							American beech	---	---	
							White oak	---	---	
							Sugar maple	---	---	
							White ash	---	---	
							Shagbark hickory	---	---	
624D2:										
Caprell	4A	Slight	Slight	Slight	Slight	Moderate	Northern red oak	69	4	Black walnut, northern red oak, eastern white pine, white ash, bur oak, white oak.
							American beech	---	---	
							White oak	---	---	
							Sugar maple	---	---	
							White ash	---	---	
							Shagbark hickory	---	---	
624E:										
Caprell	4R	Moderate	Moderate	Moderate	Slight	Moderate	Northern red oak	69	4	Black walnut, northern red oak, eastern white pine, white ash, bur oak, white oak.
							American beech	---	---	
							White oak	---	---	
							Sugar maple	---	---	
							White ash	---	---	
							Shagbark hickory	---	---	
656B:										
Octagon	4A	Slight	Slight	Slight	Slight	Moderate	Northern red oak	69	4	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							American beech	---	---	
							White oak	---	---	
							Sugar maple	---	---	
							White ash	---	---	
							Shagbark hickory	---	---	

See footnote at end of table.

Table 11.--Forestland Management and Productivity--Continued

Map symbol and soil name	Ordi-nation symbol	Management concerns: Erosion hazard	Equip-ment limita-tion	Seedling mortal-ity	Wind-throw hazard	Plant competi-tion	Potential productivity: Common trees	Site index	Produc-tivity class*	Suggested trees to plant
656C2:										
Octagon	4A	Slight	Slight	Slight	SLIHGT	Moderate	Northern red oak	69	4	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							American beech	---	---	
							White oak	---	---	
							Sugar maple	---	---	
							White ash	---	---	
							Shagbark hickory	---	---	
791A:										
Rush	5A	Slight	Slight	Slight	Slight	Severe	Northern red oak	90	5	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							White oak	90	5	
							Shagbark hickory	---	---	
							Yellow-poplar	98	7	
791B:										
Rush	5A	Slight	Slight	Slight	Slight	Severe	Northern red oak	90	5	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							White oak	90	5	
							Shagbark hickory	---	---	
							Yellow-poplar	98	7	
791C2:										
Rush	5A	Slight	Slight	Slight	Slight	Severe	Northern red oak	90	5	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							White oak	90	5	
							Shagbark hickory	---	---	
							Yellow-poplar	98	7	
792A:										
Bowes	5A	Slight	Slight	Slight	Slight	Severe	Northern red oak	90	5	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							White oak	90	5	
							Shagbark hickory	---	---	
							Yellow-poplar	98	7	
792B:										
Bowes	5A	Slight	Slight	Slight	Slight	Severe	Northern red oak	90	5	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							White oak	90	5	
							Shagbark hickory	---	---	
							Yellow-poplar	98	7	

See footnote at end of table.

Table 11.--Forestland Management and Productivity--Continued

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Suggested trees to plant
969E2:										
Casco	3R	Moderate	Moderate	Moderate	Slight	Moderate	Northern red oak	55	3	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							Black oak	---	---	
							Shagbark hickory	---	---	
Rodman	2S	Slight	Slight	Severe	Slight	Slight	Northern red oak	45	2	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							White oak	---	---	
							Red pine	---	---	
							Shagbark hickory	---	---	
969F:										
Casco	3R	Moderate	Moderate	Moderate	Slight	Moderate	Northern red oak	55	3	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							Black oak	---	---	
							Shagbark hickory	---	---	
Rodman	2R	Moderate	Moderate	Severe	Slight	Slight	Northern red oak	45	2	Black walnut, northern red oak, eastern white pine, white ash, bur oak, sugar maple, white oak.
							White oak	---	---	
							Red pine	---	---	
							Shagbark hickory	---	---	
1082A:										
Millington	4C	Slight	Severe	Slight	Moderate	Severe	Northern red oak	66	4	Bur oak, green ash, black walnut, eastern white pine, hackberry, swamp white oak, eastern redcedar.
							American beech	---	---	
							White ash	---	---	
							Blackgum	---	---	
							American sycamore	---	---	
							Swamp white oak	---	---	
							Pin oak	---	---	
							Red maple	---	---	
							Shagbark hickory	---	---	
1100A:										
Palms	2W	Slight	Severe	Severe	Severe	Severe	Red maple	55	2	Swamp white oak, hackberry, bur oak, green ash, silver maple, cottonwood, sycamore.
							Silver maple	80	2	
							White ash	---	---	
							Black ash	---	---	
							Quaking aspen	---	---	
							Tamarack	61	4	
							Northern white-cedar	---	---	

See footnote at end of table.

Table 11.--Forestland Management and Productivity--Continued

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Suggested trees to plant
1103A:										
Houghton	2W	Slight	Severe	Severe	Severe	Severe	Red maple	56	2	Swamp white oak, hackberry, bur oak, green ash, silver maple, cottonwood, sycamore.
							Silver maple	82	2	
							White ash	56	3	
							Green ash	---	---	
							Tamarack	52	3	
							Quaking aspen	60	4	
							Northern white-cedar	37	4	
1153A:										
Pella	3W	Slight	Severe	Moderate	Moderate	Severe	Northern white-cedar	33	3	Swamp white oak, hackberry, bur oak, green ash, silver maple, cottonwood, sycamore.
							White ash	---	---	
							American elm	---	---	
							Silver maple	---	---	

* Productivity class is the yield in cubic meters per hectare per year calculated at the age of culmination of the mean annual increment for fully stocked natural stands.

Table 12.--Recreational Development

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
59A:					
Lisbon	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
59B:					
Lisbon	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
60C2:					
La Rose	Moderate: percs slowly.	Moderate: percs slowly.	Severe: slope.	Slight	Slight.
62A:					
Herbert	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
67A:					
Harpster	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
87A:					
Dickinson	Slight	Slight	Slight	Slight	Slight.
87B:					
Dickinson	Slight	Slight	Moderate: slope.	Slight	Slight.
87B2:					
Dickinson	Slight	Slight	Moderate: slope.	Slight	Slight.
100A:					
Palms	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
103A:					
Houghton	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.
104A:					
Virgil	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
134A:					
Camden	Slight	Slight	Slight	Slight	Slight.
134B:					
Camden	Slight	Slight	Moderate: slope.	Slight	Slight.

Table 12.--Recreational Development--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
146A:					
Elliott	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
146B:					
Elliott	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
148A:					
Proctor	Slight	Slight	Slight	Slight	Slight.
148B:					
Proctor	Slight	Slight	Moderate: slope.	Slight	Slight.
149A:					
Brenton	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
152A:					
Drummer	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
153A:					
Pella	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
153A+:					
Pella	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
172A:					
Hoopeston	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
189A:					
Martinton	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
197A:					
Troxel	Slight	Slight	Slight	Slight	Slight.
198A:					
Elburn	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
206A:					
Thorp	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
210A:					
Lena	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
219A:					
Millbrook	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.

Table 12.--Recreational Development--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
221B:					
Parr	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Slight	Slight.
221C2:					
Parr	Moderate: percs slowly.	Moderate: percs slowly.	Severe: slope.	Slight	Slight.
223B:					
Varna	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness.	Slight	Slight.
223C2:					
Varna	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness.	Slight	Slight.
223D2:					
Varna	Moderate: slope, wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: slope.	Slight	Moderate: slope.
228B:					
Nappanee	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, droughty.
232A:					
Ashkum	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
290A:					
Warsaw	Slight	Slight	Moderate: small stones.	Slight	Slight.
290B:					
Warsaw	Slight	Slight	Moderate: slope, small stones.	Slight	Slight.
290C2:					
Warsaw	Slight	Slight	Moderate: slope, small stones.	Slight	Slight.
297A:					
Ringwood	Slight	Slight	Slight	Slight	Slight.
297B:					
Ringwood	Slight	Slight	Moderate: slope.	Slight	Slight.
298B:					
Beecher	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
310B:					
McHenry	Slight	Slight	Moderate: slope.	Severe: erodes easily.	Slight.

Table 12.--Recreational Development--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
318A:					
Lorenzo	Slight	Slight	Slight	Slight	Moderate: droughty.
318B:					
Lorenzo	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
318C2:					
Lorenzo	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
318D2:					
Lorenzo	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: droughty, slope.
323B:					
Casco	Slight	Slight	Moderate: slope, small stones.	Slight	Moderate: large stones.
323C2:					
Casco	Slight	Slight	Moderate: slope, small stones.	Slight	Moderate: large stones.
323C3:					
Casco	Slight	Slight	Moderate: slope, small stones.	Slight	Moderate: large stones, droughty.
323D2:					
Casco	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: large stones.
323D3:					
Casco	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: large stones, droughty.
325A:					
Dresden	Slight	Slight	Slight	Slight	Slight.
325B:					
Dresden	Slight	Slight	Moderate: slope.	Slight	Slight.
327A:					
Fox	Slight	Slight	Slight	Severe: erodes easily.	Slight.
327B:					
Fox	Slight	Slight	Moderate: slope.	Severe: erodes easily.	Slight.
327C2:					
Fox	Slight	Slight	Moderate: slope.	Severe: erodes easily.	Slight.
327D2:					
Fox	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.

Table 12.--Recreational Development--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
329A:					
Will	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
330A:					
Peotone	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
343A:					
Kane	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
344A:					
Harvard	Slight	Slight	Slight	Slight	Slight.
344B:					
Harvard	Slight	Slight	Moderate: slope.	Slight	Slight.
361B:					
Kidder	Slight	Slight	Moderate: slope, small stones.	Severe: erodes easily.	Slight.
361C:					
Kidder	Slight	Slight	Moderate: slope, small stones.	Severe: erodes easily.	Slight.
361C2:					
Kidder	Slight	Slight	Moderate: slope, small stones.	Severe: erodes easily.	Slight.
361C3:					
Kidder	Slight	Slight	Moderate: slope, small stones.	Slight	Slight.
361D2:					
Kidder	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
361D3:					
Kidder	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
361E:					
Kidder	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
361E2:					
Kidder	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
361F:					
Kidder	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
363B:					
Griswold	Slight	Slight	Moderate: slope.	Slight	Slight.

Table 12.--Recreational Development--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
363C2:					
Griswold	Slight	Slight	Moderate: slope.	Slight	Slight.
363D2:					
Griswold	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
369A:					
Waupecan	Slight	Slight	Slight	Slight	Slight.
369B:					
Waupecan	Slight	Slight	Moderate: slope.	Slight	Slight.
379A:					
Dakota	Slight	Slight	Moderate: small stones.	Slight	Slight.
379B:					
Dakota	Slight	Slight	Moderate: slope, small stones.	Slight	Slight.
488A:					
Hooppole	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
503B:					
Rockton	Slight	Slight	Moderate: slope, depth to rock.	Slight	Moderate: depth to rock.
512A:					
Danabrook	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Slight	Slight.
512B:					
Danabrook	Moderate: wetness.	Moderate: wetness.	Moderate: slope, wetness.	Slight	Slight.
523A:					
Dunham	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
526A:					
Grundelein	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
527B:					
Kidami	Moderate: wetness.	Moderate: wetness.	Moderate: slope, wetness.	Slight	Slight.
527C:					
Kidami	Moderate: wetness.	Moderate: wetness.	Moderate: slope, wetness.	Slight	Slight.

Table 12.--Recreational Development--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
527C2:					
Kidami	Moderate: wetness.	Moderate: wetness.	Moderate: slope, wetness.	Slight	Slight.
527D:					
Kidami	Moderate: slope, wetness.	Moderate: slope, wetness.	Severe: slope.	Slight	Moderate: slope.
527D2:					
Kidami	Moderate: slope, wetness.	Moderate: slope, wetness.	Severe: slope.	Slight	Moderate: slope.
527D3:					
Kidami	Moderate: slope, wetness.	Moderate: slope, wetness.	Severe: slope.	Slight	Moderate: slope.
528A:					
Lahoguess	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
529A:					
Selmass	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
530B:					
Ozaukee	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness.	Severe: erodes easily.	Moderate: wetness.
530C2:					
Ozaukee	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness.	Severe: erodes easily.	Moderate: wetness.
530C3:					
Ozaukee	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, small stones.	Severe: erodes easily.	Moderate: wetness.
530D2:					
Ozaukee	Moderate: slope, wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: wetness, slope.
530D3:					
Ozaukee	Moderate: slope, wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: wetness, slope.
530E:					
Ozaukee	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
543B:					
Piscasaw	Slight	Slight	Moderate: slope.	Slight	Slight.

Table 12.--Recreational Development--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
544A:					
Torox	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
545A:					
Windere	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Slight	Slight.
545B:					
Windere	Moderate: wetness.	Moderate: wetness.	Moderate: slope, wetness.	Slight	Slight.
557A:					
Millstream	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
570A:					
Martinsville	Slight	Slight	Moderate: small stones.	Slight	Slight.
570B:					
Martinsville	Slight	Slight	Moderate: slope, small stones.	Slight	Slight.
570C2:					
Martinsville	Slight	Slight	Moderate: slope, small stones.	Severe: erodes easily.	Slight.
618E:					
Senachwine	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
618F:					
Senachwine	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
624B:					
Caprell	Slight	Slight	Moderate: slope.	Slight	Slight.
624C2:					
Caprell	Slight	Slight	Moderate: slope.	Slight	Slight.
624D2:					
Caprell	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
624E:					
Caprell	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
625A:					
Geryune	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Slight	Slight.
625B:					
Geryune	Moderate: wetness.	Moderate: wetness.	Moderate: slope, wetness.	Slight	Slight.

Table 12.--Recreational Development--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
626A:					
Kish	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
635A:					
Lismod	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
635B:					
Lismod	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
636B:					
Parmod	Slight	Slight	Moderate: slope.	Slight	Slight.
656B:					
Octagon	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Slight	Slight.
656C2:					
Octagon	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Slight	Slight.
791A:					
Rush	Slight	Slight	Slight	Slight	Slight.
791B:					
Rush	Slight	Slight	Moderate: slope.	Slight	Slight.
791C2:					
Rush	Slight	Slight	Moderate: slope.	Slight	Slight.
792A:					
Bowes	Slight	Slight	Slight	Slight	Slight.
792B:					
Bowes	Slight	Slight	Moderate: slope.	Slight	Slight.
802B:					
Orthents, loamy	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Severe: erodes easily.	Slight.
865:					
Pits, gravel.					
969E2:					
Casco	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
Rodman	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.	Severe: droughty, slope.

Table 12.--Recreational Development--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
969F:					
Casco	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rodman	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: droughty, slope.
1067A:					
Harpster	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
1082A:					
Millington	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
1100A:					
Palms	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
1103A:					
Houghton	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.
1153A:					
Pella	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
1206A:					
Thorp	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
1210A:					
Lena	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
1330A:					
Peotone	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
1488A:					
Hooppole	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
1529A:					
Selmass	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
1626A:					
Kish	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
1776A:					
Comfrey	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.

Table 12.--Recreational Development--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
4103A:					
Houghton--------	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
8082A:					
Millington------	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
8776A:					
Comfrey---------	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.

Table 13.--Wildlife Habitat

(See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated)

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
59A:										
Lisbon	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
59B:										
Lisbon	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
60C2:										
La Rose	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
62A:										
Herbert	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
67A:										
Harpster	Fair	Fair	Good	Fair	Fair	Good	Fair	Fair	Fair	Fair.
87A:										
Dickinson	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
87B:										
Dickinson	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
87B2:										
Dickinson	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
100A:										
Palms	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
103A:										
Houghton	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
104A:										
Virgil	Good	Good	Good	Good	Good	Fair	Poor	Good	Good	Poor.
134A:										
Camden	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
134B:										
Camden	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
146A:										
Elliott	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
146B:										
Elliott	Fair	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
148A:										
Proctor	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
148B:										
Proctor	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
149A:										
Brenton	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.

Table 13.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
152A: Drummer	Fair	Good	Good	Fair	Fair	Good	Good	Good	Fair	Good.
153A: Pella	Good	Good	Good	Fair	Fair	Good	Good	Good	Fair	Good.
153A+: Pella	Good	Good	Good	Fair	Fair	Good	Good	Good	Fair	Good.
172A: Hoopeston	Fair	Good	Good	Good	Good	Fair	Poor	Good	Good	Poor.
189A: Martinton	Fair	Good	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
197A: Troxel	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
198A: Elburn	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
206A: Thorp	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good.
210A: Lena	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
219A: Millbrook	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
221B: Parr	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
221C2: Parr	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
223B: Varna	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
223C2: Varna	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
223D2: Varna	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
228B: Nappanee	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
232A+: Ashkum	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
290A: Warsaw	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
290B: Warsaw	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

Table 13.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
290C2:										
Warsaw	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
297A:										
Ringwood	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
297B:										
Ringwood	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
298B:										
Beecher	Fair	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
310B:										
McHenry	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
318A:										
Lorenzo	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
318B:										
Lorenzo	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
318C2:										
Lorenzo	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
318D2:										
Lorenzo	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
323B:										
Casco	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
323C2:										
Casco	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
323C3:										
Casco	Fair	Fair	Fair	Poor	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
323D2:										
Casco	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
323D3:										
Casco	Fair	Fair	Fair	Poor	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
325A:										
Dresden	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
325B:										
Dresden	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

Table 13.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
327A:										
Fox	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
327B:										
Fox	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
327C2:										
Fox	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
327D2:										
Fox	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
329A:										
Will	Fair	Good	Good	Good	Fair	Good	Good	Good	Good	Good.
330A:										
Peotone	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
343A:										
Kane	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
344A:										
Harvard	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
344B:										
Harvard	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
361B:										
Kidder	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
361C:										
Kidder	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
361C2:										
Kidder	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
361C3:										
Kidder	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
361D2:										
Kidder	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
361D3:										
Kidder	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
361E:										
Kidder	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.

Table 13.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
361E2:										
Kidder----------	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
361F:										
Kidder----------	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
363B:										
Griswold--------	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
363C2:										
Griswold--------	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
363D2:										
Griswold--------	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
369A:										
Waupecan--------	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
369B:										
Waupecan--------	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
379A:										
Dakota----------	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
379B:										
Dakota----------	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
488A:										
Hooppole--------	Good	Good	Fair	Fair	Fair	Good	Good	Fair	Fair	Fair.
503B:										
Rockton---------	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Poor.
512A:										
Danabrook-------	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
512B:										
Danabrook-------	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
523A:										
Dunham----------	Fair	Good	Good	Fair	Fair	Good	Good	Good	Fair	Good.
526A:										
Grundelein------	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
527B:										
Kidami----------	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

Table 13.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
527C:										
Kidami	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
527C2:										
Kidami	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
527D:										
Kidami	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
527D2:										
Kidami	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
527D3:										
Kidami	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
528A:										
Lahoguess	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
529A:										
Selmass	Fair	Good	Good	Fair	Fair	Good	Good	Good	Fair	Good.
530B:										
Ozaukee	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
530C2:										
Ozaukee	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
530C3:										
Ozaukee	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
530D2:										
Ozaukee	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
530D3:										
Ozaukee	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
530E:										
Ozaukee	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
543B:										
Piscasaw	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
544A:										
Torox	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
545A:										
Windere	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

Table 13.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
545B:										
Windere	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
557A:										
Millstream	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
570A:										
Martinsville	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
570B:										
Martinsville	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
570C2:										
Martinsville	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
618E:										
Senachwine	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
618F:										
Senachwine	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
624B:										
Caprell	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
624C2:										
Caprell	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
624D2:										
Caprell	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
624E:										
Caprell	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
625A:										
Geryune	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
625B:										
Geryune	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
626A:										
Kish	Fair	Good	Good	Fair	Fair	Good	Good	Good	Fair	Good.
635A:										
Lismod	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
635B:										
Lismod	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.

Table 13.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
636B:										
Parmod	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
656B:										
Octagon	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
656C2:										
Octagon	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
791A:										
Rush	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
791B:										
Rush	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
791C2:										
Rush	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
792A:										
Bowes	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
792B:										
Bowes	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
802B:										
Orthents, loamy	Good	Fair	Good	Good	Good	Poor	Poor	Good	Good	Poor.
865:										
Pits, gravel.										
969E2:										
Casco	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Rodman	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
969F:										
Casco	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Rodman	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
1067A:										
Harpster	Fair	Fair	Good	Fair	Fair	Good	Fair	Fair	Fair	Fair.
1082A:										
Millington	Poor	Fair	Fair	Good	Fair	Good	Good	Fair	Good	Good.
1100A:										
Palms	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.

Table 13.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
1103A: Houghton	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
1153A: Pella	Good	Good	Good	Fair	Fair	Good	Good	Good	Fair	Good.
1206A: Thorp	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good.
1210A: Lena	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
1330A: Peotone	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
1488A: Hooppole	Good	Good	Fair	Fair	Fair	Good	Good	Fair	Fair	Fair.
1529A: Selmass	Fair	Good	Good	Fair	Fair	Good	Good	Good	Fair	Good.
1626A: Kish	Fair	Good	Good	Fair	Fair	Good	Good	Good	Fair	Good.
1776A: Comfrey	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
4103A: Houghton	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
8082A: Millington	Good	Good	Good	Good	Fair	Good	Good	Good	Good	Good.
8776A: Comfrey	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.

Table 14.--Building Site Development

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
59A:						
Lisbon	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, frost action.	Moderate: wetness.
59B:						
Lisbon	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, frost action.	Moderate: wetness.
60C2:						
La Rose	Moderate: dense layer	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell, low strength.	Slight.
62A:						
Herbert	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action.	Moderate: wetness.
67A:						
Harpster	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: low strength, ponding, frost action.	Severe: ponding.
87A:						
Dickinson	Severe: cutbanks cave.	Slight	Slight	Slight	Moderate: frost action.	Slight.
87B:						
Dickinson	Severe: cutbanks cave.	Slight	Slight	Slight	Moderate: frost action.	Slight.
87B2:						
Dickinson	Severe: cutbanks cave.	Slight	Slight	Slight	Moderate: frost action.	Slight.
100A:						
Palms	Severe: excess humus, ponding.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding, frost action.	Severe: ponding, excess humus.
103A:						
Houghton	Severe: ponding, excess humus.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding, frost action.	Severe: excess humus, ponding.
104A:						
Virgil	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, frost action.	Moderate: wetness.
134A:						
Camden	Slight	Moderate: shrink-swell.	Slight	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.

Table 14.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
134B:						
Camden	Slight	Moderate: shrink-swell.	Slight	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.
146A:						
Elliott	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, frost action.	Moderate: wetness.
146B:						
Elliott	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, frost action.	Moderate: wetness.
148A:						
Proctor	Severe: cutbanks cave.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.
148B:						
Proctor	Severe: cutbanks cave.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.
149A:						
Brenton	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, frost action.	Moderate: wetness.
152A:						
Drummer	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: low strength, ponding, frost action.	Severe: ponding.
153A:						
Pella	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: low strength, ponding, frost action.	Severe: ponding.
153A+:						
Pella	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: low strength, ponding, frost action.	Severe: ponding.
172A:						
Hoopeston	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action.	Moderate: wetness.
189A:						
Martinton	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, frost action.	Moderate: wetness.
197A:						
Troxel	Severe: cutbanks cave.	Slight	Slight	Slight	Severe: low strength, frost action.	Slight.

Table 14.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
198A:						
Elburn----------	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, frost action.	Moderate: wetness.
206A:						
Thorp-----------	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: low strength, ponding, frost action.	Severe: ponding.
210A:						
Lena------------	Severe: excess humus, ponding.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding, frost action.	Severe: ponding, excess humus.
219A:						
Millbrook-------	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, frost action.	Moderate: wetness.
221B:						
Parr------------	Moderate: dense layer	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, low strength.	Slight.
221C2:						
Parr------------	Moderate: dense layer	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell, low strength.	Slight.
223B:						
Varna-----------	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: low strength, frost action.	Slight.
223C2:						
Varna-----------	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: low strength, frost action.	Slight.
223D2:						
Varna-----------	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: wetness.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope.
228B:						
Nappanee--------	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength.	Moderate: wetness, droughty.
232A:						
Ashkum----------	Severe: ponding.	Severe: ponding, shrink-swell.	Severe: ponding.	Severe: ponding, shrink-swell.	Severe: shrink-swell, low strength, ponding.	Severe: ponding.
290A:						
Warsaw----------	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Moderate: frost action.	Slight.

Table 14.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
290B:						
Warsaw----------	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Moderate: frost action.	Slight.
290C2:						
Warsaw----------	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Moderate: frost action.	Slight.
297A:						
Ringwood--------	Slight---------	Moderate: shrink-swell.	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell, low strength.	Slight.
297B:						
Ringwood--------	Slight---------	Moderate: shrink-swell.	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell, low strength.	Slight.
298B:						
Beecher---------	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, frost action.	Moderate: wetness.
310B:						
McHenry---------	Slight---------	Moderate: shrink-swell.	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell, frost action.	Slight.
318A:						
Lorenzo---------	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: droughty.
318B:						
Lorenzo---------	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: droughty.
318C2:						
Lorenzo---------	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Moderate: droughty.
318D2:						
Lorenzo---------	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
323B:						
Casco-----------	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: large stones.
323C2:						
Casco-----------	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Moderate: large stones.
323C3:						
Casco-----------	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Moderate: large stones, droughty.
323D2:						
Casco-----------	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: large stones.

Table 14.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
323D3:						
Casco	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: large stones, droughty.
325A:						
Dresden	Severe: cutbanks cave.	Moderate: shrink-swell.	Slight	Moderate: shrink-swell.	Severe: low strength.	Slight.
325B:						
Dresden	Severe: cutbanks cave.	Moderate: shrink-swell.	Slight	Moderate: shrink-swell.	Severe: low strength.	Slight.
327A:						
Fox	Severe: cutbanks cave.	Moderate: shrink-swell.	Slight	Moderate: shrink-swell.	Moderate: shrink-swell, frost action.	Slight.
327B:						
Fox	Severe: cutbanks cave.	Moderate: shrink-swell.	Slight	Moderate: shrink-swell.	Moderate: shrink-swell, frost action.	Slight.
327C2:						
Fox	Severe: cutbanks cave.	Moderate: shrink-swell.	Slight	Moderate: shrink-swell, slope.	Moderate: shrink-swell, frost action.	Slight.
327D2:						
Fox	Severe: cutbanks cave.	Moderate: shrink-swell, slope.	Moderate: slope.	Severe: slope.	Moderate: shrink-swell, slope, frost action.	Moderate: slope.
329A:						
Will	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: low strength, ponding.	Severe: ponding.
330A:						
Peotone	Severe: ponding.	Severe: ponding, shrink-swell.	Severe: ponding, shrink-swell.	Severe: ponding, shrink-swell.	Severe: shrink-swell, low strength, ponding.	Severe: ponding.
343A:						
Kane	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action.	Moderate: wetness.
344A:						
Harvard	Severe: cutbanks cave.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.
344B:						
Harvard	Severe: cutbanks cave.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.

Table 14.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
361B:						
Kidder	Slight	Moderate: shrink-swell.	Slight	Moderate: shrink-swell.	Moderate: shrink-swell, low strength.	Slight.
361C:						
Kidder	Slight	Moderate: shrink-swell.	Slight	Moderate: shrink-swell, slope.	Moderate: shrink-swell, low strength.	Slight.
361C2:						
Kidder	Slight	Moderate: shrink-swell.	Slight	Moderate: shrink-swell, slope.	Moderate: shrink-swell, low strength.	Slight.
361C3:						
Kidder	Slight	Moderate: shrink-swell.	Slight	Moderate: shrink-swell, slope.	Moderate: shrink-swell, low strength.	Slight.
361D2:						
Kidder	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope.	Severe: slope.	Moderate: shrink-swell, low strength, slope.	Moderate: slope.
361D3:						
Kidder	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope.	Severe: slope.	Moderate: shrink-swell, low strength, slope.	Moderate: slope.
361E:						
Kidder	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
361E2:						
Kidder	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
361F:						
Kidder	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
363B:						
Griswold	Slight	Slight	Slight	Slight	Moderate: frost action.	Slight.
363C2:						
Griswold	Slight	Slight	Slight	Moderate: slope.	Moderate: frost action.	Slight.
363D2:						
Griswold	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope.
369A:						
Waupecan	Severe: cutbanks cave.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.

Table 14.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
369B:						
Waupecan--------	Severe: cutbanks cave.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.
379A:						
Dakota----------	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Moderate: low strength, frost action.	Slight.
379B:						
Dakota----------	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Moderate: low strength, frost action.	Slight.
488A:						
Hooppole--------	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: low strength, ponding, frost action.	Severe: ponding.
503B:						
Rockton---------	Severe: depth to rock.	Moderate: shrink-swell, depth to rock.	Severe: depth to rock.	Moderate: shrink-swell, slope, depth to rock.	Moderate: depth to rock, shrink-swell.	Moderate: depth to rock.
512A:						
Danabrook-------	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: frost action.	Slight.
512B:						
Danabrook-------	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: frost action.	Slight.
523A:						
Dunham----------	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: low strength, ponding, frost action.	Severe: ponding.
526A:						
Grundelein------	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, frost action.	Moderate: wetness.
527B:						
Kidami----------	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell.	Moderate: shrink-swell, low strength, wetness.	Slight.
527C:						
Kidami----------	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Moderate: shrink-swell, low strength, wetness.	Slight.

Table 14.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
527C2:						
Kidami----------	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Moderate: shrink-swell, low strength, wetness.	Slight.
527D:						
Kidami----------	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: wetness.	Severe: slope.	Moderate: shrink-swell, wetness, slope.	Moderate: slope.
527D2:						
Kidami----------	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: wetness.	Severe: slope.	Moderate: shrink-swell, wetness, slope.	Moderate: slope.
527D3:						
Kidami----------	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: wetness.	Severe: slope.	Moderate: shrink-swell, wetness, slope.	Moderate: slope.
528A:						
Lahoguess-------	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: shrink-swell, low strength, wetness.	Moderate: wetness.
529A:						
Selmass---------	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding, frost action.	Severe: ponding.
530B:						
Ozaukee---------	Severe: wetness.	Severe: shrink-swell.	Severe: wetness.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Moderate: wetness.
530C2:						
Ozaukee---------	Severe: wetness.	Severe: shrink-swell.	Severe: wetness.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Moderate: wetness.
530C3:						
Ozaukee---------	Severe: wetness.	Severe: shrink-swell.	Severe: wetness.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Moderate: wetness.
530D2:						
Ozaukee---------	Severe: wetness.	Severe: shrink-swell.	Severe: wetness.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Moderate: wetness, slope.
530D3:						
Ozaukee---------	Severe: wetness.	Severe: shrink-swell.	Severe: wetness.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Moderate: wetness, slope.

Table 14.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
530E:						
Ozaukee	Severe: wetness, slope.	Severe: shrink-swell, slope.	Severe: wetness, slope.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength, slope.	Severe: slope.
543B:						
Piscasaw	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: frost action.	Slight.
544A:						
Torox	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, frost action.	Moderate: wetness.
545A:						
Windere	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: low strength, frost action.	Slight.
545B:						
Windere	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: low strength, frost action.	Slight.
557A:						
Millstream	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, frost action.	Moderate: wetness.
570A:						
Martinsville	Severe: cutbanks cave.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, low strength.	Slight.
570B:						
Martinsville	Severe: cutbanks cave.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, low strength.	Slight.
570C2:						
Martinsville	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Moderate: frost action.	Slight.
618E:						
Senachwine	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
618F:						
Senachwine	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
624B:						
Caprell	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, low strength, frost action.	Slight.

Table 14.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
624C2: Caprell	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell, low strength, frost action.	Slight.
624D2: Caprell	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Moderate: shrink-swell, low strength, slope.	Moderate: slope.
624E: Caprell	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
625A: Geryune	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: low strength, frost action.	Slight.
625B: Geryune	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: low strength, frost action.	Slight.
626A: Kish	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding, frost action.	Severe: ponding.
635A: Lismod	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, frost action.	Moderate: wetness.
635B: Lismod	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, frost action.	Moderate: wetness.
636B: Parmod	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, low strength, frost action.	Slight.
656B: Octagon	Moderate: dense layer	Moderate: shrink-swell.	Slight	Moderate: shrink-swell.	Severe: low strength.	Slight.
656C2: Octagon	Moderate: dense layer	Moderate: shrink-swell.	Slight	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
791A: Rush	Severe: cutbanks cave.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.

Table 14.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
791B:						
Rush	Severe: cutbanks cave.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.
791C2:						
Rush	Severe: cutbanks cave.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength, frost action.	Slight.
792A:						
Bowes	Severe: cutbanks cave.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.
792B:						
Bowes	Severe: cutbanks cave.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.
802B:						
Orthents, loamy	Moderate: wetness.	Moderate: shrink-swell.	Moderate: wetness, shrink-swell.	Moderate: shrink-swell.	Severe: low strength.	Slight.
865:						
Pits, gravel.						
969E2:						
Casco	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rodman	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: droughty, slope.
969F:						
Casco	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rodman	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: droughty, slope.
1067A:						
Harpster	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: low strength, ponding, frost action.	Severe: ponding.
1082A:						
Millington	Severe: ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: low strength, ponding, flooding.	Severe: ponding.
1100A:						
Palms	Severe: excess humus, ponding.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding, frost action.	Severe: ponding, excess humus.

Table 14.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
1103A:						
Houghton--------	Severe: ponding, excess humus.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding, frost action.	Severe: excess humus, ponding.
1153A:						
Pella-----------	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: low strength, ponding, frost action.	Severe: ponding.
1206A:						
Thorp-----------	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: low strength, ponding, frost action.	Severe: ponding.
1210A:						
Lena------------	Severe: excess humus, ponding.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding, frost action.	Severe: ponding, excess humus.
1330A:						
Peotone---------	Severe: ponding.	Severe: ponding, shrink-swell.	Severe: ponding, shrink-swell.	Severe: ponding, shrink-swell.	Severe: shrink-swell, low strength, ponding.	Severe: ponding.
1488A:						
Hooppole--------	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: low strength, ponding, frost action.	Severe: ponding.
1529A:						
Selmass---------	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding, frost action.	Severe: ponding.
1626A:						
Kish------------	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding, frost action.	Severe: ponding.
1776A:						
Comfrey---------	Severe: excess humus, wetness.	Severe: flooding, wetness, low strength.	Severe: flooding, wetness.	Severe: flooding, wetness, low strength.	Severe: low strength, wetness, flooding.	Severe: wetness.
4103A:						
Houghton--------	Severe: excess humus, ponding.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding, frost action.	Severe: ponding, excess humus.
8082A:						
Millington------	Severe: ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: low strength, ponding, flooding.	Severe: ponding.

Table 14.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
8776A:						
Comfrey---------	Severe: excess humus, wetness.	Severe: flooding, wetness, low strength.	Severe: flooding, wetness.	Severe: flooding, wetness, low strength.	Severe: low strength, wetness, flooding.	Severe: wetness.

Table 15.--Sanitary Facilities

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "good," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
59A:					
Lisbon	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: hard to pack, wetness.
59B:					
Lisbon	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: hard to pack, wetness.
60C2:					
La Rose	Severe: percs slowly.	Severe: slope.	Slight	Slight	Good.
62A:					
Herbert	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
67A:					
Harpster	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: ponding.
87A:					
Dickinson	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
87B:					
Dickinson	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
87B2:					
Dickinson	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
100A:					
Palms	Severe: subsides, ponding, percs slowly.	Severe: seepage, excess humus, ponding.	Severe: ponding.	Severe: seepage, ponding.	Poor: ponding.
103A:					
Houghton	Severe: subsides, ponding, percs slowly.	Severe: seepage, ponding, excess humus.	Severe: seepage, ponding, excess humus.	Severe: ponding, seepage.	Poor: ponding, excess humus.
104A:					
Virgil	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: wetness.	Poor: wetness.

Table 15.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
134A:					
Camden	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Slight	Fair: too clayey.
134B:					
Camden	Moderate: percs slowly.	Severe: seepage,	Severe: seepage.	Slight	Fair: too clayey.
146A:					
Elliott	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
146B:					
Elliott	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
148A:					
Proctor	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Slight	Fair: too clayey, thin layer.
148B:					
Proctor	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Slight	Fair: too clayey, thin layer.
149A:					
Brenton	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
152A:					
Drummer	Severe: ponding.	Severe: ponding.	Severe: ponding, too clayey.	Severe: ponding.	Poor: too clayey, ponding.
153A:					
Pella	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: ponding.
153A+:					
Pella	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: ponding.
172A:					
Hoopeston	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: wetness.
189A:					
Martinton	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, wetness.
197A:					
Troxel	Moderate: percs slowly.	Moderate: seepage.	Slight	Slight	Good.

Table 15.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
198A:					
Elburn	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: wetness.	Poor: wetness.
206A:					
Thorp	Severe: ponding, percs slowly.	Severe: seepage, ponding.	Severe: seepage, ponding.	Severe: ponding.	Poor: ponding.
210A:					
Lena	Severe: subsides, ponding.	Severe: seepage, excess humus, ponding.	Severe: seepage, ponding, excess humus.	Severe: seepage, ponding.	Poor: ponding, excess humus.
219A:					
Millbrook	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
221B:					
Parr	Severe: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey.
221C2:					
Parr	Severe: percs slowly.	Severe: slope.	Moderate: too clayey.	Slight	Fair: too clayey.
223B:					
Varna	Severe: wetness, percs slowly.	Severe: wetness.	Severe: too clayey.	Moderate: wetness.	Poor: too clayey, hard to pack.
223C2:					
Varna	Severe: wetness, percs slowly.	Severe: wetness.	Severe: too clayey.	Moderate: wetness.	Poor: too clayey, hard to pack.
223D2:					
Varna	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: too clayey.	Moderate: wetness, slope.	Poor: too clayey, hard to pack.
228B:					
Nappanee	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
232A:					
Ashkum	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding, too clayey.	Severe: ponding.	Poor: too clayey, ponding.
290A:					
Warsaw	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.

Table 15.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
290B:					
Warsaw	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
290C2:					
Warsaw	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
297A:					
Ringwood	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: small stones.
297B:					
Ringwood	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: small stones.
298B:					
Beecher	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness.	Severe: wetness.	Poor: wetness.
310B:					
McHenry	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: small stones.
318A:					
Lorenzo	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
318B:					
Lorenzo	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
318C2:					
Lorenzo	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
318D2:					
Lorenzo	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
323B:					
Casco	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.

Table 15.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
323C2:					
Casco	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
323C3:					
Casco	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
323D2:					
Casco	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
323D3:					
Casco	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
325A:					
Dresden	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
325B:					
Dresden	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
327A:					
Fox	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
327B:					
Fox	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
327C2:					
Fox	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
327D2:					
Fox	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.

Table 15.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
329A:					
Will	Severe: ponding, poor filter.	Severe: seepage, ponding.	Severe: seepage, ponding.	Severe: seepage, ponding.	Poor: seepage, too sandy, small stones.
330A:					
Peotone	Severe: ponding, percs slowly.	Slight	Severe: ponding, too clayey.	Severe: ponding.	Poor: too clayey, hard to pack, ponding.
343A:					
Kane	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, small stones.
344A:					
Harvard	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Slight	Fair: too clayey.
344B:					
Harvard	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Slight	Fair: too clayey.
361B:					
Kidder	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: small stones.
361C:					
Kidder	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: small stones.
361C2:					
Kidder	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: small stones.
361C3:					
Kidder	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: small stones.
361D2:					
Kidder	Moderate: percs slowly, slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Poor: small stones.
361D3:					
Kidder	Moderate: percs slowly, slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Poor: small stones.
361E:					
Kidder	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: small stones, slope.
361E2:					
Kidder	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: small stones, slope.

Table 15.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
361F:					
Kidder	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: small stones, slope.
363B:					
Griswold	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Fair: small stones.
363C2:					
Griswold	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Fair: small stones.
363D2:					
Griswold	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: small stones, slope.
369A:					
Waupecan	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: too clayey, thin layer.
369B:					
Waupecan	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: too clayey, thin layer.
379A:					
Dakota	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
379B:					
Dakota	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
488A:					
Hooppole	Severe: ponding.	Severe: seepage, ponding.	Severe: seepage, ponding.	Severe: ponding.	Poor: ponding.
503B:					
Rockton	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock.
512A:					
Danabrook	Severe: wetness, percs slowly.	Severe: wetness.	Moderate: wetness, too clayey.	Moderate: wetness.	Fair: too clayey, wetness.
512B:					
Danabrook	Severe: wetness, percs slowly.	Severe: wetness.	Moderate: wetness, too clayey.	Moderate: wetness.	Fair: too clayey, wetness.

Table 15.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
523A:					
Dunham	Severe: ponding.	Severe: seepage, ponding.	Severe: seepage, ponding.	Severe: ponding.	Poor: ponding.
526A:					
Grundelein	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: wetness.
527B:					
Kidami	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey, wetness.
527C:					
Kidami	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey, wetness.
527C2:					
Kidami	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey, wetness.
527D:					
Kidami	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey, slope, wetness.
527D2:					
Kidami	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey, slope, wetness.
527D3:					
Kidami	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey, slope, wetness.
528A:					
Lahoguess	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: wetness.
529A:					
Selmass	Severe: ponding.	Severe: seepage, ponding.	Severe: seepage, ponding.	Severe: ponding.	Poor: ponding.
530B:					
Ozaukee	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, small stones.
530C2:					
Ozaukee	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, small stones.

Table 15.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
530C3: Ozaukee	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, small stones.
530D2: Ozaukee	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness.	Moderate: wetness, slope.	Fair: too clayey, small stones, slope.
530D3: Ozaukee	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness.	Moderate: wetness, slope.	Fair: too clayey, small stones, slope.
530E: Ozaukee	Severe: wetness, percs slowly, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Poor: slope.
543B: Piscasaw	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey.
544A: Torox	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
545A: Windere	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey, wetness.
545B: Windere	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey, wetness.
557A: Millstream	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: wetness.
570A: Martinsville	Moderate: percs slowly.	Moderate: seepage.	Moderate: too clayey.	Slight	Fair: too clayey, thin layer.
570B: Martinsville	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey, thin layer.
570C2: Martinsville	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Slight	Fair: thin layer.

Table 15.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
618E:					
Senachwine------	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
618F:					
Senachwine------	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
624B:					
Caprell---------	Moderate: percs slowly.	Moderate: seepage, slope.	Slight-----------	Slight-----------	Good.
624C2:					
Caprell---------	Moderate: percs slowly.	Moderate: seepage, slope.	Slight-----------	Slight-----------	Good.
624D2:					
Caprell---------	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
624E:					
Caprell---------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
625A:					
Geryune---------	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey, wetness.
625B:					
Geryune---------	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey, wetness.
626A:					
Kish------------	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: ponding.
635A:					
Lismod----------	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
635B:					
Lismod----------	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
636B:					
Parmod----------	Moderate: percs slowly.	Moderate: seepage, slope.	Slight-----------	Slight-----------	Good.
656B:					
Octagon---------	Severe: percs slowly.	Moderate: seepage, slope.	Slight-----------	Slight-----------	Good.

Table 15.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
656C2:					
Octagon	Severe: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
791A:					
Rush	Moderate: percs slowly.	Moderate: seepage.	Severe: seepage.	Slight	Fair: too clayey.
791B:					
Rush	Moderate: percs slowly.	Moderate: seepage, slope.	Severe: seepage.	Slight	Fair: too clayey.
791C2:					
Rush	Moderate: percs slowly.	Moderate: seepage, slope.	Severe: seepage.	Slight	Fair: too clayey.
792A:					
Bowes	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Slight	Fair: too clayey, thin layer.
792B:					
Bowes	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Slight	Fair: too clayey, thin layer.
802B:					
Orthents, loamy	Severe: percs slowly.	Moderate: slope, wetness.	Moderate: too clayey.	Slight	Fair: too clayey.
865:					
Pits, gravel.					
969E2:					
Casco	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, small stones.
Rodman	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, small stones.
969F:					
Casco	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, small stones.
Rodman	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, small stones.
1067A:					
Harpster	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: ponding.

Table 15.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
1082A:					
Millington	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Poor: ponding.
1100A:					
Palms	Severe: subsides, ponding, percs slowly.	Severe: seepage, excess humus, ponding.	Severe: ponding.	Severe: seepage, ponding.	Poor: ponding.
1103A:					
Houghton	Severe: subsides, ponding, percs slowly.	Severe: seepage, ponding, excess humus.	Severe: seepage, ponding, excess humus.	Severe: ponding, seepage.	Poor: ponding, excess humus.
1153A:					
Pella	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: ponding.
1206A:					
Thorp	Severe: ponding, percs slowly.	Severe: seepage, ponding.	Severe: seepage, ponding.	Severe: ponding.	Poor: ponding.
1210A:					
Lena	Severe: subsides, ponding.	Severe: seepage, excess humus, ponding.	Severe: seepage, ponding, excess humus.	Severe: seepage, ponding.	Poor: ponding, excess humus.
1330A:					
Peotone	Severe: ponding, percs slowly.	Slight	Severe: ponding, too clayey.	Severe: ponding.	Poor: too clayey, hard to pack, ponding.
1488A:					
Hooppole	Severe: ponding.	Severe: seepage, ponding.	Severe: seepage, ponding.	Severe: ponding.	Poor: ponding.
1529A:					
Selmass	Severe: ponding.	Severe: seepage, ponding.	Severe: seepage, ponding.	Severe: ponding.	Poor: ponding.
1626A:					
Kish	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: ponding.
1776A:					
Comfrey	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
4103A:					
Houghton	Severe: subsides, ponding, percs slowly.	Severe: seepage, excess humus, ponding.	Severe: seepage, ponding, excess humus.	Severe: seepage, ponding.	Poor: ponding, excess humus.

Table 15.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
8082A:					
Millington------	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Poor: ponding.
8776A:					
Comfrey---------	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.

Table 16.--Construction Materials

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
59A:				
Lisbon	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
59B:				
Lisbon	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
60C2:				
La Rose	Fair: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim.
62A:				
Herbert	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: area reclaim, too clayey.
67A:				
Harpster	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
87A:				
Dickinson	Good	Probable	Improbable: too sandy.	Fair: thin layer.
87B:				
Dickinson	Good	Probable	Improbable: too sandy.	Fair: thin layer.
87B2:				
Dickinson	Good	Probable	Improbable: too sandy.	Fair: thin layer.
100A:				
Palms	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, wetness.
103A:				
Houghton	Poor: wetness, low strength.	Improbable: excess humus.	Improbable: excess humus.	Poor: wetness, excess humus.
104A:				
Virgil	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
134A:				
Camden	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
134B:				
Camden	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.

Table 16.--Construction Materials--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
146A:				
Elliott	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
146B:				
Elliott	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
148A:				
Proctor	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
148B:				
Proctor	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
149A:				
Brenton	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
152A:				
Drummer	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
153A:				
Pella	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
153A+:				
Pella	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
172A:				
Hoopeston	Fair: wetness.	Probable	Improbable: too sandy.	Fair: too sandy, small stones.
189A:				
Martinton	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
197A:				
Troxel	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
198A:				
Elburn	Fair: wetness.	Probable	Improbable: too sandy.	Good.
206A:				
Thorp	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
210A:				
Lena	Poor: wetness, low strength.	Improbable: excess humus.	Improbable: excess humus.	Poor: excess humus, wetness.
219A:				
Millbrook	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.

Table 16.--Construction Materials--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
221B:				
Parr	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: area reclaim, too clayey.
221C2:				
Parr	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: area reclaim, too clayey.
223B:				
Varna	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
223C2:				
Varna	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
223D2:				
Varna	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
228B:				
Nappanee	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
232A:				
Ashkum	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
290A:				
Warsaw	Good	Probable	Probable	Poor: small stones, area reclaim.
290B:				
Warsaw	Good	Probable	Probable	Poor: small stones, area reclaim.
290C2:				
Warsaw	Good	Probable	Probable	Poor: small stones, area reclaim.
297A:				
Ringwood	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, area reclaim.
297B:				
Ringwood	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, area reclaim.
298B:				
Beecher	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.

Table 16.--Construction Materials--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
310B:				
McHenry	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
318A:				
Lorenzo	Good	Probable	Probable	Poor: area reclaim, small stones.
318B:				
Lorenzo	Good	Probable	Probable	Poor: area reclaim, small stones.
318C2:				
Lorenzo	Good	Probable	Probable	Poor: area reclaim, small stones.
318D2:				
Lorenzo	Good	Probable	Probable	Poor: area reclaim, small stones.
323B:				
Casco	Good	Probable	Probable	Poor: too sandy, small stones, area reclaim.
323C2:				
Casco	Good	Probable	Probable	Poor: too sandy, small stones, area reclaim.
323C3:				
Casco	Good	Probable	Probable	Poor: too sandy, small stones, area reclaim.
323D2:				
Casco	Good	Probable	Probable	Poor: too sandy, small stones, area reclaim.
323D3:				
Casco	Good	Probable	Probable	Poor: too sandy, small stones, area reclaim.
325A:				
Dresden	Good	Probable	Probable	Poor: small stones, area reclaim.
325B:				
Dresden	Good	Probable	Probable	Poor: small stones, area reclaim.

Table 16.--Construction Materials--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
327A:				
Fox	Good	Probable	Probable	Poor: small stones, area reclaim.
327B:				
Fox	Good	Probable	Probable	Poor: small stones, area reclaim.
327C2:				
Fox	Good	Probable	Probable	Poor: small stones, area reclaim.
327D2:				
Fox	Good	Probable	Probable	Poor: small stones, area reclaim.
329A:				
Will	Poor: wetness.	Probable	Probable	Poor: small stones, area reclaim, wetness.
330A:				
Peotone	Poor: shrink-swell, low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
343A:				
Kane	Fair: wetness.	Probable	Probable	Poor: small stones, area reclaim.
344A:				
Harvard	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
344B:				
Harvard	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
361B:				
Kidder	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
361C:				
Kidder	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
361C2:				
Kidder	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.

Table 16.--Construction Materials--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
361C3:				
Kidder	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
361D2:				
Kidder	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
361D3:				
Kidder	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
361E:				
Kidder	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
361E2:				
Kidder	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
361F:				
Kidder	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
363B:				
Griswold	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, area reclaim.
363C2:				
Griswold	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, area reclaim.
363D2:				
Griswold	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, area reclaim, slope.
369A:				
Waupecan	Good	Probable	Probable	Poor: area reclaim.
369B:				
Waupecan	Good	Probable	Probable	Poor: area reclaim.
379A:				
Dakota	Good	Probable	Probable	Poor: small stones, area reclaim.

Table 16.--Construction Materials--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
379B:				
Dakota	Good	Probable	Probable	Poor: small stones, area reclaim.
488A:				
Hooppole	Poor: wetness.	Probable	Improbable: too sandy.	Poor: wetness.
503B:				
Rockton	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, too clayey, small stones.
512A:				
Danabrook	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
512B:				
Danabrook	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
523A:				
Dunham	Poor: wetness.	Probable	Probable	Poor: area reclaim, wetness.
526A:				
Grundelein	Fair: wetness.	Probable	Probable	Poor: area reclaim.
527B:				
Kidami	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
527C:				
Kidami	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
527C2:				
Kidami	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
527D:				
Kidami	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, slope.
527D2:				
Kidami	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, slope.

Table 16.--Construction Materials--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
527D3:				
Kidami	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, slope.
528A:				
Lahoguess	Fair: wetness.	Probable	Improbable: too sandy.	Good.
529A:				
Selmass	Poor: wetness.	Probable	Improbable: too sandy.	Poor: wetness.
530B:				
Ozaukee	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
530C2:				
Ozaukee	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
530C3:				
Ozaukee	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
530D2:				
Ozaukee	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
530D3:				
Ozaukee	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
530E:				
Ozaukee	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
543B:				
Piscasaw	Fair: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
544A:				
Torox	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
545A:				
Windere	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
545B:				
Windere	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
557A:				
Millstream	Fair: wetness.	Probable	Probable	Poor: area reclaim.

Table 16.--Construction Materials--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
570A:				
Martinsville	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
570B:				
Martinsville	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
570C2:				
Martinsville	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
618E:				
Senachwine	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
618F:				
Senachwine	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
624B:				
Caprell	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
624C2:				
Caprell	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
624D2:				
Caprell	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, slope.
624E:				
Caprell	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
625A:				
Geryune	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
625B:				
Geryune	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
626A:				
Kish	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
635A:				
Lismod	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
635B:				
Lismod	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.

Table 16.--Construction Materials--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
636B:				
Parmod	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
656B:				
Octagon	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: area reclaim, too clayey.
656C2:				
Octagon	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: area reclaim, too clayey.
791A:				
Rush	Good	Probable	Probable	Poor: area reclaim.
791B:				
Rush	Good	Probable	Probable	Poor: area reclaim.
791C2:				
Rush	Good	Probable	Probable	Poor: area reclaim.
792A:				
Bowes	Good	Probable	Probable	Poor: area reclaim.
792B:				
Bowes	Good	Probable	Probable	Poor: area reclaim.
802B:				
Orthents, loamy	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
865:				
Pits, gravel.				
969E2:				
Casco	Fair: slope.	Probable	Probable	Poor: too sandy, small stones, area reclaim.
Rodman	Fair: slope.	Probable	Probable	Poor: too sandy, small stones, area reclaim.
969F:				
Casco	Poor: slope.	Probable	Probable	Poor: too sandy, small stones, area reclaim.
Rodman	Poor: slope.	Probable	Probable	Poor: too sandy, small stones, area reclaim.

Table 16.--Construction Materials--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
1067A: Harpster	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
1082A: Millington	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
1100A: Palms	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, wetness.
1103A: Houghton	Poor: wetness, low strength.	Improbable: excess humus.	Improbable: excess humus.	Poor: wetness, excess humus.
1153A: Pella	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
1206A: Thorp	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
1210A: Lena	Poor: wetness, low strength.	Improbable: excess humus.	Improbable: excess humus.	Poor: excess humus, wetness.
1330A: Peotone	Poor: shrink-swell, low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
1488A: Hooppole	Poor: wetness.	Probable	Improbable: too sandy.	Poor: wetness.
1529A: Selmass	Poor: wetness.	Probable	Improbable: too sandy.	Poor: wetness.
1626A: Kish	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
1776A: Comfrey	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
4103A: Houghton	Poor: wetness.	Improbable: excess humus.	Improbable: excess humus.	Poor: excess humus, wetness.

Table 16.--Construction Materials--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
8082A:				
Millington------	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
8776A:				
Comfrey---------	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.

Table 17.--Water Management

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated. The infomation in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
59A:							
Lisbon	Moderate: seepage.	Moderate: hard to pack, wetness.	Severe: no water.	Frost action	Wetness	Erodes easily, wetness.	Wetness, erodes easily, rooting depth.
59B:							
Lisbon	Moderate: seepage, slope.	Moderate: hard to pack, wetness.	Severe: no water.	Frost action, slope.	Slope, wetness.	Erodes easily, wetness.	Wetness, erodes easily, rooting depth.
60C2:							
La Rose	Moderate: slope.	Moderate: piping.	Severe: no water, slow refill.	Deep to water	Slope, rooting depth.	Favorable	Rooting depth.
62A:							
Herbert	Moderate: seepage.	Moderate: piping, wetness.	Severe: slow refill.	Frost action	Wetness, rooting depth.	Erodes easily, wetness.	Wetness, erodes easily, rooting depth.
67A:							
Harpster	Moderate: seepage.	Severe: ponding.	Moderate: slow refill.	Ponding, frost action.	Ponding	Ponding	Wetness.
87A:							
Dickinson	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Soil blowing	Too sandy, soil blowing.	Favorable.
87B:							
Dickinson	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, soil blowing.	Too sandy, soil blowing.	Favorable.
87B2:							
Dickinson	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, soil blowing.	Too sandy, soil blowing.	Favorable.
100A:							
Palms	Severe: seepage.	Severe: piping, ponding.	Severe: slow refill.	Ponding, subsides, frost action.	Ponding, soil blowing.	Erodes easily, ponding, soil blowing.	Wetness, erodes easily, rooting depth.

Table 17.--Water Management--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
103A:							
Houghton	Severe: seepage.	Severe: excess humus, ponding.	Severe: slow refill.	Frost action, subsides, ponding.	Ponding, soil blowing.	Ponding, soil blowing.	Wetness.
104A:							
Virgil	Severe: seepage.	Severe: wetness.	Moderate: slow refill.	Frost action	Wetness	Erodes easily, wetness.	Wetness, erodes easily.
134A:							
Camden	Moderate: seepage.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily	Erodes easily	Erodes easily.
134B:							
Camden	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
146A:							
Elliott	Slight	Moderate: piping, wetness.	Severe: no water.	Percs slowly, frost action.	Wetness, percs slowly.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, rooting depth.
146B:							
Elliott	Moderate: slope.	Moderate: piping, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, rooting depth.
148A:							
Proctor	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Favorable	Erodes easily	Erodes easily.
148B:							
Proctor	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope	Erodes easily	Erodes easily.
149A:							
Brenton	Moderate: seepage.	Severe: wetness.	Severe: cutbanks cave.	Frost action	Wetness	Wetness	Wetness.
152A:							
Drummer	Moderate: seepage.	Severe: ponding.	Severe: cutbanks cave.	Ponding, frost action.	Ponding	Ponding	Wetness.

Table 17.--Water Management--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Limitations for-- Embankments, dikes, and levees	Limitations for-- Aquifer-fed excavated ponds	Features affecting-- Drainage	Features affecting-- Irrigation	Features affecting-- Terraces and diversions	Features affecting-- Grassed waterways
153A: Pella	Moderate: seepage.	Severe: piping, ponding.	Moderate: slow refill.	Ponding, frost action.	Ponding	Ponding	Wetness.
153A+: Pella	Moderate: seepage.	Severe: piping, ponding.	Moderate: slow refill.	Ponding, frost action.	Ponding	Ponding	Wetness.
172A: Hoopeston	Severe: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Frost action, cutbanks cave.	Wetness, soil blowing.	Wetness, too sandy, soil blowing.	Wetness.
189A: Martinton	Slight	Severe: wetness.	Severe: slow refill.	Frost action	Wetness	Erodes easily, wetness.	Wetness, erodes easily.
197A: Troxel	Moderate: seepage.	Severe: piping.	Severe: no water.	Deep to water	Favorable	Favorable	Favorable.
198A: Elburn	Severe: seepage.	Severe: wetness.	Severe: cutbanks cave.	Frost action	Wetness	Erodes easily, wetness.	Wetness, erodes easily.
206A: Thorp	Severe: seepage.	Severe: ponding.	Severe: slow refill.	Ponding, percs slowly, frost action.	Ponding, percs slowly, erodes easily.	Erodes easily, ponding, percs slowly.	Wetness, erodes easily, percs slowly.
210A: Lena	Severe: seepage.	Severe: excess humus, ponding.	Slight	Ponding, subsides, frost action.	Ponding, soil blowing.	Ponding, soil blowing.	Wetness.
219A: Millbrook	Moderate: seepage.	Severe: wetness.	Severe: cutbanks cave.	Frost action	Wetness	Erodes easily, wetness.	Wetness, erodes easily.
221B: Parr	Moderate: seepage, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, percs slowly.	Favorable	Rooting depth, percs slowly.

Table 17.--Water Management--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
221C2: Parr	Moderate: seepage, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, percs slowly.	Favorable	Rooting depth, percs slowly.
223B: Varna	Moderate: slope.	Moderate: hard to pack, wetness.	Severe: no water.	Frost action, slope.	Slope, wetness, percs slowly.	Wetness	Favorable.
223C2: Varna	Moderate: slope.	Moderate: hard to pack, wetness.	Severe: no water.	Frost action, slope.	Slope, wetness, percs slowly.	Wetness	Favorable.
223D2: Varna	Severe: slope.	Moderate: hard to pack, wetness.	Severe: no water.	Frost action, slope.	Slope, wetness, percs slowly.	Slope, wetness.	Slope.
228B: Nappanee	Moderate: slope.	Moderate: hard to pack, wetness.	Severe: no water.	Percs slowly, slope.	Slope, wetness, droughty.	Erodes easily, wetness.	Wetness, erodes easily.
232A: Ashkum	Slight	Severe: ponding.	Severe: slow refill.	Ponding, frost action.	Ponding, rooting depth.	Ponding	Wetness, rooting depth.
290A: Warsaw	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Favorable	Too sandy	Favorable.
290B: Warsaw	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope	Too sandy	Favorable.
290C2: Warsaw	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope	Too sandy	Favorable.
297A: Ringwood	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Rooting depth	Erodes easily	Erodes easily, rooting depth.
297B: Ringwood	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope, rooting depth.	Erodes easily	Erodes easily, rooting depth.

Table 17.--Water Management--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
298B:							
Beecher	Moderate: slope.	Moderate: piping, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, rooting depth.
310B:							
McHenry	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, rooting depth, erodes easily.	Erodes easily	Erodes easily, rooting depth.
318A:							
Lorenzo	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Droughty	Too sandy	Droughty, rooting depth.
318B:							
Lorenzo	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty.	Too sandy	Droughty, rooting depth.
318C2:							
Lorenzo	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty.	Too sandy	Droughty, rooting depth.
318D2:							
Lorenzo	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty.	Slope, too sandy.	Slope, droughty, rooting depth.
323B:							
Casco	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty.	Large stones, too sandy.	Large stones, droughty.
323C2:							
Casco	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty.	Large stones, too sandy.	Large stones, droughty.
323C3:							
Casco	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty.	Large stones, too sandy.	Large stones, droughty.
323D2:							
Casco	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty.	Slope, large stones, too sandy.	Large stones, slope, droughty.

Table 17.--Water Management--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
323D3:							
Casco	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty.	Slope, large stones, too sandy.	Large stones, slope, droughty.
325A:							
Dresden	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Favorable	Too sandy	Favorable.
325B:							
Dresden	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope	Too sandy	Favorable.
327A:							
Fox	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Favorable	Erodes easily, too sandy.	Erodes easily.
327B:							
Fox	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope	Erodes easily, too sandy.	Erodes easily.
327C2:							
Fox	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope	Erodes easily, too sandy.	Erodes easily.
327D2:							
Fox	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope	Slope, erodes easily, too sandy.	Slope, erodes easily.
329A:							
Will	Severe: seepage.	Severe: seepage, ponding.	Severe: cutbanks cave.	Ponding, frost action.	Ponding, rooting depth.	Ponding, too sandy.	Wetness, rooting depth.
330A:							
Peotone	Slight	Severe: ponding.	Severe: slow refill.	Ponding, frost action.	Ponding	Ponding	Wetness.
343A:							
Kane	Severe: seepage.	Severe: seepage, wetness.	Severe: cutbanks cave.	Frost action, cutbanks cave.	Wetness, rooting depth.	Wetness, too sandy.	Wetness, rooting depth.

Table 17.--Water Management--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
344A: Harvard	Severe: seepage.	Moderate: piping.	Severe: no water.	Deep to water	Favorable	Erodes easily	Erodes easily.
344B: Harvard	Severe: seepage.	Moderate: piping.	Severe: no water.	Deep to water	Slope	Erodes easily	Erodes easily.
361B: Kidder	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope	Erodes easily	Erodes easily.
361C: Kidder	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope	Erodes easily	Erodes easily.
361C2: Kidder	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope	Erodes easily	Erodes easily.
361C3: Kidder	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope	Favorable	Favorable.
361D2: Kidder	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope	Slope, erodes easily.	Slope, erodes easily.
361D3: Kidder	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope	Slope	Slope.
361E: Kidder	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope	Slope, erodes easily.	Slope, erodes easily.
361E2: Kidder	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope	Slope, erodes easily.	Slope, erodes easily.

Table 17.--Water Management--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
361F:							
Kidder	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope	Slope, erodes easily.	Slope, erodes easily.
363B:							
Griswold	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope	Favorable	Favorable.
363C2:							
Griswold	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope	Favorable	Favorable.
363D2:							
Griswold	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope	Slope	Slope.
369A:							
Waupecan	Severe: seepage.	Moderate: thin layer.	Severe: no water.	Deep to water	Rooting depth	Erodes easily	Erodes easily, rooting depth.
369B:							
Waupecan	Severe: seepage.	Moderate: thin layer.	Severe: no water.	Deep to water	Slope, rooting depth.	Erodes easily	Erodes easily, rooting depth.
379A:							
Dakota	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Favorable	Too sandy	Favorable.
379B:							
Dakota	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope	Too sandy	Favorable.
488A:							
Hooppole	Severe: seepage.	Severe: ponding.	Severe: cutbanks cave.	Ponding, frost action.	Ponding	Ponding	Wetness.
503B:							
Rockton	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Depth to rock	Depth to rock.

Table 17.--Water Management--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
512A:							
Danabrook	Moderate: seepage.	Moderate: piping, wetness.	Severe: slow refill.	Frost action	Wetness	Erodes easily, wetness.	Erodes easily, rooting depth.
512B:							
Danabrook	Moderate: seepage, slope.	Moderate: piping, wetness.	Severe: slow refill.	Frost action, slope.	Slope, wetness.	Erodes easily, wetness.	Erodes easily, rooting depth.
523A:							
Dunham	Severe: seepage.	Severe: ponding.	Severe: cutbanks cave.	Ponding, frost action.	Ponding	Erodes easily, ponding.	Wetness, erodes easily.
526A:							
Grundelein	Severe: seepage.	Severe: wetness.	Severe: cutbanks cave.	Frost action	Wetness	Erodes easily, wetness.	Wetness, erodes easily, rooting depth.
527B:							
Kidami	Moderate: seepage, slope.	Moderate: piping, wetness.	Severe: slow refill.	Slope	Slope, wetness.	Wetness	Rooting depth.
527C:							
Kidami	Moderate: seepage, slope.	Moderate: piping, wetness.	Severe: slow refill.	Slope	Slope, wetness.	Wetness	Rooting depth.
527C2:							
Kidami	Moderate: seepage, slope.	Moderate: piping, wetness.	Severe: slow refill.	Slope	Slope, wetness.	Wetness	Rooting depth.
527D:							
Kidami	Severe: slope.	Moderate: piping, wetness.	Severe: slow refill.	Slope	Slope, wetness.	Slope, wetness.	Slope, rooting depth.
527D2:							
Kidami	Severe: slope.	Moderate: piping, wetness.	Severe: slow refill.	Slope	Slope, wetness.	Slope, wetness.	Slope, rooting depth.

Table 17.--Water Management--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
527D3:							
Kidami----------	Severe: slope.	Moderate: piping, wetness.	Severe: slow refill.	Slope----------	Slope, wetness.	Slope, wetness.	Slope, rooting depth.
528A:							
Lahoguess-------	Severe: seepage.	Moderate: piping.	Severe: cutbanks cave.	Favorable------	Wetness--------	Wetness--------	Wetness.
529A:							
Selmass---------	Severe: seepage.	Severe: ponding.	Severe: cutbanks cave.	Ponding, frost action.	Ponding--------	Ponding--------	Wetness.
530B:							
Ozaukee---------	Moderate: slope.	Moderate: wetness.	Severe: no water.	Percs slowly, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness.	Erodes easily, percs slowly.
530C2:							
Ozaukee---------	Moderate: slope.	Moderate: wetness.	Severe: no water.	Percs slowly, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness.	Erodes easily, percs slowly.
530C3:							
Ozaukee---------	Moderate: slope.	Moderate: wetness.	Severe: no water.	Percs slowly, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness.	Erodes easily, percs slowly.
530D2:							
Ozaukee---------	Severe: slope.	Moderate: wetness.	Severe: no water.	Percs slowly, slope.	Slope, wetness, percs slowly.	Slope, erodes easily, wetness.	Slope, erodes easily, percs slowly.
530D3:							
Ozaukee---------	Severe: slope.	Moderate: wetness.	Severe: no water.	Percs slowly, slope.	Slope, wetness, percs slowly.	Slope, erodes easily, wetness.	Slope, erodes easily, percs slowly.
530E:							
Ozaukee---------	Severe: slope.	Moderate: wetness.	Severe: no water.	Percs slowly, slope.	Slope, wetness, percs slowly.	Slope, erodes easily, wetness.	Slope, erodes easily, percs slowly.
543B:							
Piscasaw--------	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.

Table 17.--Water Management--Continued

Map symbol and soil name	Limitations for--: Pond reservoir areas	Limitations for--: Embankments, dikes, and levees	Limitations for--: Aquifer-fed excavated ponds	Features affecting--: Drainage	Features affecting--: Irrigation	Features affecting--: Terraces and diversions	Features affecting--: Grassed waterways
544A: Torox	Moderate: seepage.	Severe: wetness.	Moderate: slow refill.	Frost action	Wetness, erodes easily.	Erodes easily, wetness.	Wetness, erodes easily.
545A: Windere	Moderate: seepage.	Moderate: piping, wetness.	Moderate: deep to water, slow refill.	Frost action	Wetness	Erodes easily, wetness.	Erodes easily.
545B: Windere	Moderate: seepage, slope.	Moderate: piping, wetness.	Moderate: deep to water, slow refill.	Frost action, slope.	Slope, wetness.	Erodes easily, wetness.	Erodes easily.
557A: Millstream	Severe: seepage.	Severe: wetness.	Severe: cutbanks cave.	Frost action	Wetness	Erodes easily, wetness.	Wetness, erodes easily.
570A: Martinsville	Moderate: seepage.	Severe: piping.	Severe: no water.	Deep to water	Favorable	Favorable	Favorable.
570B: Martinsville	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope	Favorable	Favorable.
570C2: Martinsville	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope	Erodes easily	Erodes easily.
618E: Senachwine	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, droughty.	Slope, erodes easily.	Slope, erodes easily, droughty.
618F: Senachwine	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, droughty.	Slope, erodes easily.	Slope, erodes easily, droughty.
624B: Caprell	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope	Favorable	Favorable.

Table 17.--Water Management--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
624C2:							
Caprell	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope	Favorable	Favorable.
624D2:							
Caprell	Severe: slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope	Slope	Slope.
624E:							
Caprell	Severe: slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope	Slope	Slope.
625A:							
Geryune	Moderate: seepage.	Moderate: piping, wetness.	Moderate: deep to water, slow refill.	Frost action	Wetness	Erodes easily	Erodes easily.
625B:							
Geryune	Moderate: seepage, slope.	Moderate: piping, wetness.	Moderate: deep to water, slow refill.	Frost action, slope.	Slope, wetness.	Erodes easily	Erodes easily.
626A:							
Kish	Moderate: seepage.	Severe: ponding.	Moderate: slow refill.	Ponding, frost action.	Ponding	Ponding	Wetness.
635A:							
Lismod	Moderate: seepage.	Severe: wetness.	Moderate: slow refill.	Frost action	Wetness	Wetness	Wetness.
635B:							
Lismod	Moderate: seepage, slope.	Severe: wetness.	Moderate: slow refill.	Frost action, slope.	Slope, wetness.	Wetness	Wetness.
636B:							
Parmod	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water		Favorable	Favorable.
656B:							
Octagon	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, percs slowly, rooting depth.	Erodes easily, percs slowly.	Erodes easily, rooting depth.

Table 17.--Water Management--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
656C2:							
Octagon---------	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, percs slowly, rooting depth.	Erodes easily, percs slowly.	Erodes easily, rooting depth.
791A:							
Rush------------	Moderate: seepage.	Moderate: thin layer, piping.	Severe: no water.	Deep to water	Erodes easily	Erodes easily	Erodes easily.
791B:							
Rush------------	Moderate: seepage, slope.	Moderate: thin layer, piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
791C2:							
Rush------------	Moderate: seepage, slope.	Moderate: thin layer, piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
792A:							
Bowes-----------	Severe: seepage.	Moderate: thin layer.	Severe: no water.	Deep to water	Favorable------	Erodes easily	Erodes easily.
792B:							
Bowes-----------	Severe: seepage.	Moderate: thin layer.	Severe: no water.	Deep to water	Slope----------	Erodes easily	Erodes easily.
802B:							
Orthents, loamy-	Moderate: slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope, rooting depth, erodes easily.	Erodes easily	Erodes easily, rooting depth.
865:							
Pits, gravel.							
969E2:							
Casco-----------	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty.	Slope, large stones, too sandy.	Large stones, slope, droughty.
Rodman----------	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty.	Slope, too sandy.	Slope, droughty.

Table 17.--Water Management--Continued

	Limitations for--			Features affecting--			
Map symbol and soil name	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
969F:							
Casco	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty.	Slope, large stones, too sandy.	Large stones, slope, droughty.
Rodman	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty.	Slope, too sandy.	Slope, droughty.
1067A:							
Harpster	Moderate: seepage.	Severe: ponding.	Moderate: slow refill.	Ponding, frost action.	Ponding	Ponding	Wetness.
1082A:							
Millington	Moderate: seepage.	Severe: piping, ponding.	Moderate: slow refill.	Ponding, flooding, frost action.	Ponding, flooding.	Ponding	Wetness.
1100A:							
Palms	Severe: seepage.	Severe: piping, ponding.	Severe: slow refill.	Ponding, subsides, frost action.	Ponding, soil blowing.	Erodes easily, ponding, soil blowing.	Wetness, erodes easily, rooting depth.
1103A:							
Houghton	Severe: seepage.	Severe: excess humus, ponding.	Severe: slow refill.	Frost action, subsides, ponding.	Ponding, soil blowing.	Ponding, soil blowing.	Wetness.
1153A:							
Pella	Moderate: seepage.	Severe: piping, ponding.	Moderate: slow refill.	Ponding, frost action.	Ponding	Ponding	Wetness.
1206A:							
Thorp	Severe: seepage.	Severe: ponding.	Severe: slow refill.	Ponding, percs slowly, frost action.	Ponding, percs slowly, erodes easily.	Erodes easily, ponding, percs slowly.	Wetness, erodes easily, percs slowly.
1210A:							
Lena	Severe: seepage.	Severe: excess humus, ponding.	Slight	Ponding, subsides, frost action.	Ponding, soil blowing.	Ponding, soil blowing.	Wetness.
1330A:							
Peotone	Slight	Severe: ponding.	Severe: slow refill.	Ponding, frost action.	Ponding	Ponding	Wetness.

Table 17.--Water Management--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
1488A:							
Hooppole	Severe: seepage.	Severe: ponding.	Severe: cutbanks cave.	Ponding, frost action.	Ponding	Ponding	Wetness.
1529A:							
Selmass	Severe: seepage.	Severe: ponding.	Severe: cutbanks cave.	Ponding, frost action.	Ponding	Ponding	Wetness.
1626A:							
Kish	Moderate: seepage.	Severe: ponding.	Moderate: slow refill.	Ponding, frost action.	Ponding	Ponding	Wetness.
1776A:							
Comfrey	Moderate: seepage.	Severe: wetness.	Moderate: slow refill.	Flooding, frost action.	Wetness, flooding.	Wetness	Wetness.
4103A:							
Houghton	Severe: seepage.	Severe: excess humus, ponding.	Severe: slow refill.	Ponding, subsides, frost action.	Ponding	Ponding	Wetness.
8082A:							
Millington	Moderate: seepage.	Severe: piping, ponding.	Moderate: slow refill.	Ponding, flooding, frost action.	Ponding, flooding.	Ponding	Wetness.
8776A:							
Comfrey	Moderate: seepage.	Severe: wetness.	Moderate: slow refill.	Flooding, frost action.	Wetness, flooding.	Wetness	Wetness.

Table 18.--Engineering Index Properties

(Absence of an entry indicates that data were not estimated)

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
59A:												
Lisbon----------	0-11	Silt loam------	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	80-95	25-40	5-20
	11-36	Silty clay loam, silt loam.	CL, CH	A-7, A-6	0	0	100	95-100	95-100	80-98	35-55	15-35
	36-39	Loam, clay loam	CL	A-4, A-6, A-7	0	0-2	95-100	90-100	80-95	60-85	20-45	8-25
	39-69	Loam, sandy loam.	CL	A-6, A-4	0	0-3	90-100	85-98	70-90	50-80	20-40	8-20
59B:												
Lisbon----------	0-11	Silt loam------	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	80-95	25-40	5-20
	11-36	Silty clay loam, silt loam.	CL, CH	A-7, A-6	0	0	100	95-100	95-100	80-98	35-55	15-35
	36-39	Loam, clay loam	CL	A-4, A-6, A-7	0	0-2	95-100	90-100	80-95	60-85	20-45	8-25
	39-69	Loam, sandy loam.	CL	A-6, A-4	0	0-3	90-100	85-98	70-90	50-80	20-40	8-20
60C2:												
La Rose---------	0-7	Loam-----------	CL	A-6, A-4	0	0	100	95-100	90-100	60-95	30-40	8-15
	7-21	Clay loam, silty clay loam.	CL	A-6, A-7	0	0	95-100	90-100	85-100	60-85	30-45	15-25
	21-60	Loam, silt loam	CL	A-6	0	0-5	95-100	85-100	75-95	50-80	25-40	10-20
62A:												
Herbert---------	0-8	Silt loam------	CL	A-6	0	0	100	100	95-100	85-100	30-40	10-20
	8-12	Silt loam------	CL	A-6	0	0	100	100	95-100	90-100	25-35	10-20
	12-26	Silty clay loam	CL	A-7, A-6	0	0	100	100	95-100	90-100	25-45	12-25
	26-36	Clay loam, loam	CL	A-6	0	0	95-100	90-100	80-95	60-85	25-40	10-20
	36-60	Loam, sandy loam.	CL	A-6, A-4	0	0	95-100	85-98	70-90	50-80	25-40	8-20
67A:												
Harpster--------	0-18	Silty clay loam	CL, CH	A-7	0	0	100	95-100	95-100	90-100	45-60	20-35
	18-34	Silty clay loam	CL, CH	A-7	0	0	100	95-100	95-100	85-100	40-60	20-35
	34-43	Silty clay loam, silt loam, loam.	CL, CH	A-6, A-7	0	0	100	95-100	95-100	70-100	35-55	20-35
	43-60	Stratified sandy loam to clay loam.	CL, CL-ML, SC, SC-SM	A-4, A-6, A-7	0	0	100	95-100	95-100	45-95	20-50	5-25

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
87A:												
Dickinson-------	0-14	Sandy loam-----	SM, SC, SC-SM	A-4, A-2	0	0	100	100	85-95	30-50	15-30	NP-10
	14-26	Fine sandy loam, sandy loam.	SM, SC, SC-SM	A-4	0	0	100	100	85-95	35-50	15-30	NP-10
	26-38	Loamy sand, loamy fine sand, fine sand.	SM, SP-SM, SC-SM	A-2, A-3	0	0	100	100	80-95	5-20	10-20	NP-5
	38-60	Sand, loamy fine sand, loamy sand.	SM, SP-SM	A-3, A-2	0	0	100	100	70-90	5-20	---	NP
87B:												
Dickinson-------	0-14	Sandy loam-----	SM, SC, SC-SM	A-4, A-2	0	0	100	100	85-95	30-50	15-30	NP-10
	14-26	Fine sandy loam, sandy loam.	SM, SC, SC-SM	A-4	0	0	100	100	85-95	35-50	15-30	NP-10
	26-38	Loamy sand, loamy fine sand, fine sand.	SM, SP-SM, SC-SM	A-2, A-3	0	0	100	100	80-95	5-20	10-20	NP-5
	38-60	Sand, loamy fine sand, loamy sand.	SM, SP-SM	A-3, A-2	0	0	100	100	70-90	5-20	---	NP
87B2:												
Dickinson-------	0-8	Sandy loam-----	SM, SC, SC-SM	A-4, A-2	0	0	100	100	85-95	30-50	15-30	NP-10
	8-30	Fine sandy loam, sandy loam.	SM, SC, SC-SM	A-4	0	0	100	100	85-95	35-50	15-30	NP-10
	30-46	Loamy sand, loamy fine sand, fine sand.	SM, SP-SM, SC-SM	A-2, A-3	0	0	100	100	80-95	5-20	10-20	NP-5
	46-60	Sand, loamy fine sand, loamy sand.	SM, SP-SM	A-3, A-2	0	0	100	100	70-90	5-20	---	NP
100A:												
Palms-----------	0-6	Muck-----------	PT	A-8	0	0	0	0	0	0	---	NP
	6-32	Muck-----------	PT	A-8	0	0	0	0	0	0	---	NP
	32-60	Clay loam, silty clay loam, gravelly sandy loam.	CL-ML, CL, SC, SC-SM	A-4, A-6, A-7, A-2	0	0	85-100	60-100	35-95	15-90	20-45	5-20

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
103A:												
Houghton--------	0-7	Muck-----------	PT	A-8	0	0	0	0	0	0	---	NP
	7-60	Muck-----------	PT	A-8	0	0	0	0	0	0	---	NP
104A:												
Virgil----------	0-7	Silt loam------	CL	A-4, A-6	0	0	100	100	90-100	85-95	20-35	8-20
	7-13	Silt loam------	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	85-95	20-35	5-20
	13-49	Silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	90-100	30-50	15-30
	49-60	Loam, sandy loam, silty clay loam.	CL, SC, SC-SM, CL-ML	A-6, A-4, A-2-4, A-2-6	0	0-5	90-100	85-100	70-100	30-90	20-35	5-15
134A:												
Camden----------	0-14	Silt loam------	CL, ML, CL-ML	A-4, A-6	0	0	100	100	95-100	90-100	20-35	3-15
	14-29	Silt loam, silty clay loam.	CL	A-6	0	0	100	100	90-100	90-100	25-40	15-25
	29-60	Clay loam, sandy loam, silt loam.	ML, SC, SM, CL	A-4, A-6	0	0-5	95-100	90-100	60-100	35-85	20-40	3-15
	60-80	Stratified sandy loam to silt loam.	SM, SC, ML, CL	A-4	0	0-5	90-100	87-100	50-80	25-70	15-25	3-10
134B:												
Camden----------	0-14	Silt loam------	CL, ML, CL-ML	A-4, A-6	0	0	100	100	95-100	90-100	20-35	3-15
	14-29	Silt loam, silty clay loam.	CL	A-6	0	0	100	100	90-100	90-100	25-40	15-25
	29-60	Clay loam, sandy loam, silt loam.	ML, SC, SM, CL	A-4, A-6	0	0-5	95-100	90-100	60-100	35-85	20-40	3-15
	60-80	Stratified sandy loam to silt loam.	SM, SC, ML, CL	A-4	0	0-5	90-100	87-100	50-80	25-70	15-25	3-10
146A:												
Elliott---------	0-16	Silt loam------	CL	A-6, A-4	0	0	95-100	95-100	95-100	75-100	30-40	8-18
	16-33	Silty clay, silty clay loam, clay.	CH, CL	A-6, A-7	0	0-5	95-100	90-100	90-100	75-96	30-52	11-26
	33-60	Silty clay loam, clay loam.	CL	A-6, A-7	0	0-5	90-100	85-100	80-100	70-95	28-45	11-24

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
146B:												
Elliott---------	0-16	Silt loam------	CL	A-6, A-4	0	0	95-100	95-100	95-100	75-100	30-40	8-18
	16-33	Silty clay, silty clay loam, clay.	CH, CL	A-6, A-7	0	0-5	95-100	90-100	90-100	75-96	30-52	11-26
	33-60	Silty clay loam, clay loam.	CL	A-6, A-7	0	0-5	90-100	85-100	80-100	70-95	28-45	11-24
148A:												
Proctor---------	0-11	Silt loam------	CL	A-6	0	0	100	100	95-100	85-100	25-40	10-20
	11-27	Silty clay loam, silt loam.	CL	A-7, A-6	0	0	98-100	98-100	95-100	90-100	25-50	10-25
	27-38	Clay loam, sandy loam, loam.	CL, SC, CL-ML, SC-SM	A-6, A-7, A-4, A-2	0	0	90-100	90-100	75-100	30-85	20-45	5-25
	38-73	Stratified loam to sand.	SC, CL, SC-SM, CL-ML	A-2, A-4, A-6	0	0	85-100	85-100	50-100	25-85	20-40	5-20
148B:												
Proctor---------	0-11	Silt loam------	CL	A-6	0	0	100	100	95-100	85-100	25-40	10-20
	11-27	Silty clay loam, silt loam.	CL	A-7, A-6	0	0	98-100	98-100	95-100	90-100	25-50	10-25
	27-38	Clay loam, sandy loam, loam.	CL, SC, CL-ML, SC-SM	A-6, A-7, A-4, A-2	0	0	90-100	90-100	75-100	30-85	20-45	5-25
	38-73	Stratified loam to sand.	SC, CL, SC-SM, CL-ML	A-2, A-4, A-6	0	0	85-100	85-100	50-100	25-85	20-40	5-20
149A:												
Brenton---------	0-13	Silt loam------	CL	A-6, A-4	0	0	100	100	95-100	85-100	30-40	8-15
	13-35	Silty clay loam, silt loam.	CL, ML	A-6, A-7	0	0	100	100	95-100	85-100	35-50	10-25
	35-43	Clay loam, loam, silt loam.	CL	A-6, A-7	0	0	100	95-100	90-100	55-80	30-45	10-20
	43-60	Stratified loamy sand to silt loam.	SC-SM, SC, CL-ML, CL	A-2, A-4, A-6	0	0	95-100	85-100	60-95	15-40	0-25	NP-10

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
152A:												
Drummer---------	0-19	Silty clay loam	CL	A-6, A-7	0	0	100	95-100	95-100	85-95	30-50	15-30
	19-43	Silty clay loam, silt loam, silty clay.	CL	A-6, A-7	0	0	100	95-100	95-100	85-95	30-50	15-30
	43-48	Silt loam, clay loam, sandy loam.	CL, SC	A-6, A-7	0	0-5	95-100	90-100	75-95	40-85	30-50	15-30
	48-60	Stratified loamy sand to silty clay loam.	SC, CL	A-4, A-6, A-2-4	0	0-5	95-100	75-95	75-95	15-80	20-35	7-20
153A:												
Pella-----------	0-14	Silty clay loam	CL	A-7	0	0	100	95-100	90-100	85-95	40-50	15-25
	14-39	Silty clay loam, silty clay, clay loam.	CL	A-6, A-7	0	0	100	95-100	90-100	85-95	30-50	15-30
	39-50	Stratified silty clay loam to sandy loam.	CL	A-6, A-7	0-1	0-5	95-100	90-100	85-95	60-90	25-45	10-25
	50-60	Stratified sandy loam to silty clay loam.	SC-SM, SC, CL, CL-ML	A-2, A-4, A-6	0-1	0-5	90-100	80-100	50-100	30-85	20-35	7-20
153A+:												
Pella-----------	0-30	Silt loam------	CL	A-6, A-7	0	0	100	95-100	90-100	85-95	30-45	10-20
	30-53	Silty clay loam, silty clay, clay loam.	CL	A-6, A-7	0	0	100	95-100	90-100	85-95	30-50	15-30
	53-62	Stratified silty clay loam to sandy loam.	CL	A-6, A-7	0-1	0-5	95-100	90-100	85-95	60-90	25-45	10-25
	62-80	Stratified sandy loam to silty clay loam.	SC-SM, SC, CL, CL-ML	A-2, A-4, A-6	0-1	0-5	90-100	80-100	50-100	30-85	20-35	7-20

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
172A:												
Hoopeston-------	0-14	Sandy loam-----	SM, SC-SM, SC	A-2, A-4	0	0	90-100	90-100	70-90	25-45	0-25	NP-10
	14-38	Stratified fine sandy loam loamy sand.	SM, SC, SC-SM	A-2, A-4	0	0	90-100	90-100	60-85	25-50	0-30	NP-10
	38-60	Stratified sand fine sandy loam.	SP-SM, SM, SC, SC-SM	A-2, A-3	0	0	90-100	90-100	50-80	5-35	0-25	NP-10
189A:												
Martinton-------	0-11	Silt loam------	CL	A-6, A-7	0	0	95-100	95-100	90-100	75-95	30-45	10-20
	11-30	Silty clay loam, silty clay.	CL	A-7, A-6	0	0	95-100	95-100	90-100	70-95	35-50	20-30
	30-60	Stratified sandy loam to silty clay.	CL, SC	A-6, A-7	0	0	90-100	80-100	75-100	35-90	25-45	10-25
197A:												
Troxel----------	0-8	Silt loam------	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	85-95	25-40	5-20
	8-39	Silt loam------	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	85-95	25-40	5-20
	39-55	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	95-100	85-95	70-95	30-50	15-30
	55-80	Stratified silty clay loam to gravelly loamy sand.	SC-SM, CL, SC, CL-ML	A-4, A-6, A-2	0	0	85-100	80-100	70-95	30-80	25-40	5-20
198A:												
Elburn----------	0-12	Silt loam------	CL	A-6	0	0	100	100	95-100	90-100	25-40	10-25
	12-42	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	100	95-100	90-100	30-50	15-35
	42-48	Loam, sandy loam, clay loam.	CL, CL-ML, SC, SC-SM	A-6, A-4, A-2	0	0	90-100	85-100	60-90	30-85	20-40	5-20
	48-60	Sandy loam, sand, loam.	SM, SP-SM	A-2, A-3	0	0	90-100	85-100	60-90	5-60	0-20	NP-5

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
206A:												
Thorp-----------	0-11	Silt loam------	CL	A-6, A-4	0	0	95-100	95-100	90-100	85-95	20-40	8-19
	11-22	Silt loam------	CL	A-4, A-6	0	0	95-100	95-100	90-100	85-95	25-35	7-15
	22-38	Silty clay loam, silt loam.	CL	A-7, A-6	0	0	95-100	95-100	90-100	85-95	35-50	13-27
	38-60	Silt loam, clay loam, sandy clay loam.	CL, SC	A-6, A-4, A-7	0	0	90-100	90-100	90-100	40-90	20-50	8-26
210A:												
Lena------------	0-11	Muck-----------	PT	A-8	0	0	0	0	0	0	---	NP
	11-60	Sapric material	PT	A-8	0	0	0	0	0	0	---	NP
219A:												
Millbrook-------	0-8	Silt loam------	CL, CL-ML, ML	A-6, A-4	0	0	100	100	95-100	85-100	20-35	3-15
	8-12	Silt loam------	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	85-100	20-35	5-15
	12-26	Silty clay loam, silt loam.	CL	A-6, A-7-6	0	0	100	100	95-100	85-100	30-45	10-25
	26-41	Clay loam, loam, sandy loam.	SC, CL	A-6, A-7	0-1	0-5	95-100	90-100	70-90	40-80	25-50	10-25
	41-65	Stratified loamy sand to clay loam.	SM, SC, CL, ML	A-4, A-6, A-2	0-1	0-5	95-100	90-100	70-95	30-80	0-30	NP-15
221B:												
Parr------------	0-11	Silt loam------	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	80-100	50-90	15-30	4-15
	11-32	Clay loam, loam, silty clay loam.	CL	A-6, A-4	0	0	90-100	90-100	75-100	50-95	25-35	9-15
	32-36	Loam-----------	CL	A-6, A-4	0	0	90-100	90-100	75-85	50-65	25-35	8-15
	36-60	Loam-----------	CL, ML, CL-ML	A-4	0	0-3	85-95	85-98	75-85	50-65	0-25	3-8
221C2:												
Parr------------	0-9	Silt loam------	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	80-100	50-90	15-30	4-15
	9-29	Clay loam, loam, silty clay loam.	CL	A-6, A-4	0	0	90-100	90-100	75-100	50-95	25-35	9-15
	29-33	Loam-----------	CL	A-6, A-4	0	0	90-100	90-100	75-85	50-65	25-35	8-15
	33-60	Loam-----------	CL, ML, CL-ML	A-4	0	0-3	85-95	85-98	75-85	50-65	0-25	3-8

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
223B:												
Varna-----------	0-11	Silt loam------	CL	A-6, A-4	0	0-5	95-100	95-100	95-100	85-95	25-40	8-20
	11-32	Silty clay, silty clay loam, clay.	CL, CH	A-7, A-6	0-1	0-10	95-100	85-100	85-100	80-100	35-56	15-29
	32-60	Silty clay loam, clay loam.	CL	A-7, A-6	0-1	0-10	95-100	85-100	85-100	80-95	30-45	13-26
223C2:												
Varna-----------	0-8	Silt loam------	CL	A-6, A-4	0	0-5	95-100	95-100	95-100	85-95	25-40	8-20
	8-25	Silty clay, silty clay loam, clay.	CL, CH	A-7, A-6	0-1	0-10	95-100	85-100	85-100	80-100	35-56	15-29
	25-60	Silty clay loam, clay loam.	CL	A-7, A-6	0-1	0-10	95-100	85-100	85-100	80-95	30-45	13-26
223D2:												
Varna-----------	0-8	Silt loam------	CL	A-6, A-4	0	0-5	95-100	95-100	95-100	85-95	25-40	8-20
	8-25	Silty clay, silty clay loam, clay.	CL, CH	A-7, A-6	0-1	0-10	95-100	85-100	85-100	80-100	35-56	15-29
	25-60	Silty clay loam, clay loam.	CL	A-7, A-6	0-1	0-10	95-100	85-100	85-100	80-95	30-45	13-26
228B:												
Nappanee--------	0-8	Silt loam------	CL	A-6	0	0-5	95-100	90-100	85-100	55-90	30-40	10-15
	8-34	Silty clay, clay.	CH	A-7	0	0-5	95-100	90-100	85-100	70-95	50-70	25-45
	34-60	Silty clay, clay, clay loam.	CL, CH	A-7	0	0-5	95-100	90-100	85-100	70-95	40-60	20-35
232A:												
Ashkum----------	0-13	Silty clay loam	CL, CH	A-7	0	0	100	95-100	95-100	75-100	40-55	20-30
	13-30	Silty clay loam, silty clay.	CL, CH	A-7	0	0	100	90-100	85-100	75-100	45-65	20-35
	30-60	Silty clay loam, silty clay.	CL	A-7, A-6	0	0-5	95-100	85-100	80-100	75-95	35-50	15-30

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
290A:												
Warsaw----------	0-15	Loam-----------	CL, CL-ML	A-4, A-6	0	0	85-100	85-100	70-100	50-90	20-30	4-12
	15-31	Sandy clay loam, loam, clay loam.	SC, CL, CL-ML, SC-SM	A-6, A-2-6, A-4, A-2-4	0	0-3	90-100	85-100	60-90	30-70	20-35	6-15
	31-60	Stratified sand to extremely coarse sand.	SP, GP, SP-SM, GP-GM	A-1	0	1-5	30-70	22-80	7-20	2-10	0-20	NP
290B:												
Warsaw----------	0-15	Loam-----------	CL, CL-ML	A-4, A-6	0	0	85-100	85-100	70-100	50-90	20-30	4-12
	15-31	Sandy clay loam, loam, clay loam.	SC, CL, CL-ML, SC-SM	A-6, A-2-6, A-4, A-2-4	0	0-3	90-100	85-100	60-90	30-70	20-35	6-15
	31-60	Stratified sand to extremely coarse sand.	SP, GP, SP-SM, GP-GM	A-1	0	1-5	30-70	22-80	7-20	2-10	0-20	NP
290C2:												
Warsaw----------	0-9	Loam-----------	CL, CL-ML	A-4, A-6	0	0	85-100	85-100	70-100	50-90	20-30	4-12
	9-31	Sandy clay loam, loam, clay loam.	SC, CL, CL-ML, SC-SM	A-6, A-2-6, A-4, A-2-4	0	0-3	90-100	85-100	60-90	30-70	20-35	6-15
	31-60	Stratified sand to extremely coarse sand.	SP, GP, SP-SM, GP-GM	A-1	0	1-5	30-70	22-80	7-20	2-10	0-20	NP
297A:												
Ringwood--------	0-12	Silt loam------	CL	A-4, A-6	0	0	100	100	95-100	65-90	28-40	8-20
	12-20	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	100	95-100	80-95	30-50	15-35
	20-36	Sandy clay loam, clay loam, loam.	SC, CL	A-6	0	0	100	90-100	85-95	45-70	25-40	11-25
	36-60	Sandy loam, gravelly sandy loam.	SM, SC, SC-SM	A-2, A-4	0	0	85-95	60-90	50-80	30-50	0-20	NP-10

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
297B:												
Ringwood--------	0-12	Silt loam------	CL	A-4, A-6	0	0	100	100	95-100	65-90	28-40	8-20
	12-20	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	100	95-100	80-95	30-50	15-35
	20-36	Sandy clay loam, clay loam, loam.	SC, CL	A-6	0	0	100	90-100	85-95	45-70	25-40	11-25
	36-60	Sandy loam, gravelly sandy loam.	SM, SC, SC-SM	A-2, A-4	0	0	85-95	60-90	50-80	30-50	0-20	NP-10
298B:												
Beecher---------	0-9	Silt loam------	ML	A-6, A-4, A-7	0	0	95-100	95-100	90-100	85-95	30-45	7-15
	9-32	Silty clay, silty clay loam.	CL, CH	A-6, A-7	0	0	95-100	95-100	90-100	85-95	35-55	15-30
	32-60	Silty clay loam, clay loam.	CL	A-6, A-7	0-1	0-5	90-100	90-100	85-95	80-90	28-50	10-25
310B:												
McHenry---------	0-14	Silt loam------	CL, CL-ML	A-4, A-6	0	0	100	95-100	90-100	70-90	20-40	5-15
	14-22	Silty clay loam, clay loam, sandy clay loam.	CL	A-7, A-6	0	0	100	95-100	90-100	70-95	35-50	20-35
	22-37	Sandy loam, sandy clay loam, clay loam.	SC, CL	A-6, A-2-6	0-1	0-5	90-100	85-98	75-90	20-80	25-40	11-20
	37-60	Fine sandy loam, sandy loam, gravelly sandy loam.	SM	A-2, A-4, A-1-b	0-2	2-10	75-95	65-90	30-80	15-40	0-20	NP-4
318A:												
Lorenzo---------	0-8	Loam-----------	CL	A-6	0	0-5	95-100	95-100	85-100	60-95	25-40	10-20
	8-18	Loam, clay loam, gravelly sandy clay loam.	CL, SC	A-6, A-7, A-2-6	0	5-10	85-100	65-95	35-85	20-60	30-50	10-25
	18-60	Sand and gravel	GP, GP-GM, SP, SP-SM	A-1, A-2	0	5-20	25-80	15-80	10-40	0-10	0-30	NP-10

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
318B:												
Lorenzo----------	0-8	Loam------------	CL	A-6	0	0-5	95-100	95-100	85-100	60-95	25-40	10-20
	8-18	Loam, clay loam, gravelly sandy clay loam.	CL, SC	A-6, A-7, A-2-6	0	5-10	85-100	65-95	35-85	20-60	30-50	10-25
	18-60	Sand and gravel	GP, GP-GM, SP, SP-SM	A-1, A-2	0	5-20	25-80	15-80	10-40	0-10	0-30	NP-10
318C2:												
Lorenzo----------	0-8	Loam------------	CL	A-6	0	0-5	95-100	95-100	85-100	60-95	25-40	10-20
	8-18	Loam, clay loam, gravelly sandy clay loam.	CL, SC	A-6, A-7, A-2-6	0	5-10	85-100	65-95	35-85	20-60	30-50	10-25
	18-60	Sand and gravel	GP, GP-GM, SP, SP-SM	A-1, A-2	0	5-20	25-80	15-80	10-40	0-10	0-30	NP-10
318D2:												
Lorenzo----------	0-8	Loam------------	CL	A-6	0	0-5	95-100	95-100	85-100	60-95	25-40	10-20
	8-18	Loam, clay loam, gravelly sandy clay loam.	CL, SC	A-6, A-7, A-2-6	0	5-10	85-100	65-95	35-85	20-60	30-50	10-25
	18-60	Sand and gravel	GP, GP-GM, SP, SP-SM	A-1, A-2	0	5-20	25-80	15-80	10-40	0-10	0-30	NP-10
323B:												
Casco------------	0-8	Loam------------	ML, CL-ML, CL	A-4	0	0-9	80-100	75-100	65-95	50-80	20-30	3-10
	8-17	Clay loam, sandy clay loam, gravelly loam.	SC, CL, GC	A-6, A-7, A-2	0-1	0-9	55-100	50-100	40-90	20-80	25-46	11-26
	17-60	Stratified sand to gravel.	GP, SP, GP-GM, SP-SM	A-1, A-3, A-2	0-3	0-30	25-100	20-85	10-75	2-10	0-14	NP
323C2:												
Casco------------	0-8	Loam------------	ML, CL-ML, CL	A-4	0	0-9	80-100	75-100	65-95	50-80	20-30	3-10
	8-17	Clay loam, sandy clay loam, gravelly loam.	SC, CL, GC	A-6, A-7, A-2	0-1	0-9	55-100	50-100	40-90	20-80	25-46	11-26
	17-60	Stratified sand to gravel.	GP, SP, GP-GM, SP-SM	A-1, A-3, A-2	0-3	0-30	25-100	20-85	10-75	2-10	0-14	NP

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
323C3:												
Casco-----------	0-7	Clay loam------	CL	A-6	0	0-9	80-100	75-100	65-90	50-80	30-40	10-20
	7-19	Clay loam, sandy clay loam, gravelly loam.	SC, CL, GC	A-6, A-7, A-2	0-1	0-9	55-100	50-100	40-90	20-80	25-46	11-26
	19-60	Stratified sand to gravel.	GP, SP, GP-GM, SP-SM	A-1, A-2, A-3	0-3	0-30	25-100	20-85	10-75	2-10	0-14	NP
323D2:												
Casco-----------	0-8	Loam-----------	ML, CL-ML, CL	A-4	0	0-9	80-100	75-100	65-95	50-80	20-30	3-10
	8-17	Clay loam, sandy clay loam, gravelly loam.	SC, CL, GC	A-6, A-7, A-2	0-1	0-9	55-100	50-100	40-90	20-80	25-46	11-26
	17-60	Stratified sand to gravel.	GP, SP, GP-GM, SP-SM	A-1, A-3, A-2	0-3	0-30	25-100	20-85	10-75	2-10	0-14	NP
323D3:												
Casco-----------	0-7	Clay loam------	CL	A-6	0	0-9	80-100	75-100	65-90	50-80	30-40	10-20
	7-19	Clay loam, sandy clay loam, gravelly loam.	SC, CL, GC	A-6, A-7, A-2	0-1	0-9	55-100	50-100	40-90	20-80	25-46	11-26
	19-60	Stratified sand to gravel.	GP, SP, GP-GM, SP-SM	A-1, A-2, A-3	0-3	0-30	25-100	20-85	10-75	2-10	0-14	NP
325A:												
Dresden---------	0-7	Silt loam------	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	85-100	20-40	5-15
	7-27	Silty clay loam, clay loam, loam.	CL	A-6, A-7	0	0	100	90-100	90-100	85-95	30-45	10-25
	27-32	Gravelly clay loam, sandy clay loam, very gravelly loam.	CL, SC, GC	A-6, A-7, A-2	0-1	0-5	60-100	55-100	55-90	30-70	25-45	10-25
	32-60	Sand and gravel	GP, GP-GM, SP, SP-SM	A-1	0-5	5-35	45-90	25-80	10-40	0-10	0-14	NP

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
325B:												
Dresden---------	0-7	Silt loam------	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	85-100	20-40	5-15
	7-27	Silty clay loam, clay loam, loam.	CL	A-6, A-7	0	0	100	90-100	90-100	85-95	30-45	10-25
	27-32	Gravelly clay loam, sandy clay loam, very gravelly loam.	CL, SC, GC	A-6, A-7, A-2	0-1	0-5	60-100	55-100	55-90	30-70	25-45	10-25
	32-60	Sand and gravel	GP, GP-GM, SP, SP-SM	A-1	0-5	5-35	45-90	25-80	10-40	0-10	0-14	NP
327A:												
Fox-------------	0-10	Silt loam------	ML, CL, CL-ML	A-4	0	0	95-100	95-100	85-95	65-90	0-25	3-8
	10-21	Silty clay loam, silt loam.	CL	A-6, A-7	0-1	0	95-100	85-100	60-100	50-90	22-50	10-25
	21-33	Clay loam, sandy clay loam, gravelly loam.	CL, SC, GC	A-2, A-6, A-7	0-1	0-5	65-100	55-100	30-100	15-80	22-45	10-25
	33-60	Sand and gravel, sand, coarse sand.	SP, GP, SP-SM, GP-GM	A-1, A-2, A-3	0-3	0-10	30-100	20-95	10-90	2-10	0-14	NP
327B:												
Fox-------------	0-10	Silt loam------	ML, CL, CL-ML	A-4	0	0	95-100	95-100	85-95	65-90	0-25	3-8
	10-21	Silty clay loam, silt loam.	CL	A-6, A-7	0-1	0	95-100	85-100	60-100	50-90	22-50	10-25
	21-33	Clay loam, sandy clay loam, gravelly loam.	CL, SC, GC	A-2, A-6, A-7	0-1	0-5	65-100	55-100	30-100	15-80	22-45	10-25
	33-60	Sand and gravel, sand, coarse sand.	SP, GP, SP-SM, GP-GM	A-1, A-2, A-3	0-3	0-10	30-100	20-95	10-90	2-10	0-14	NP

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
327C2:												
Fox	0-10	Silt loam	ML, CL, CL-ML	A-4	0	0	95-100	95-100	85-95	65-90	0-25	3-8
	10-21	Silty clay loam, silt loam.	CL	A-6, A-7	0-1	0	95-100	85-100	60-100	50-90	22-50	10-25
	21-33	Clay loam, sandy clay loam, gravelly loam.	CL, SC, GC	A-2, A-6, A-7	0-1	0-5	65-100	55-100	30-100	15-80	22-45	10-25
	33-60	Sand and gravel, sand, coarse sand.	SP, GP, SP-SM, GP-GM	A-1, A-2, A-3	0-3	0-10	30-100	20-95	10-90	2-10	0-14	NP
327D2:												
Fox	0-10	Loam	ML, CL, CL-ML	A-4	0	0	95-100	95-100	85-95	65-90	0-25	3-8
	10-21	Silty clay loam, silt loam.	CL	A-6, A-7	0-1	0	95-100	85-100	60-100	50-90	22-50	10-25
	21-33	Clay loam, sandy clay loam, gravelly loam.	CL, SC, GC	A-2, A-6, A-7	0-1	0-5	65-100	55-100	30-100	15-80	22-45	10-25
	33-60	Sand and gravel, sand, coarse sand.	SP, GP, SP-SM, GP-GM	A-1, A-2, A-3	0-3	0-10	30-100	20-95	10-90	2-10	0-14	NP
329A:												
Will	0-14	Loam	CL	A-7, A-6	0	0	95-100	95-100	90-100	60-90	35-50	15-25
	14-28	Loam, clay loam, silty clay loam.	CL, CH	A-7	0-1	0-5	90-100	85-100	60-100	60-90	40-60	20-35
	28-60	Stratified sand to very gravelly loamy sand.	GP, GP-GM, SP, SP-SM	A-1	0-2	1-10	40-85	25-80	10-40	0-10	0-14	NP
330A:												
Peotone	0-14	Silty clay loam	CH, CL	A-7	0	0	100	95-100	95-100	80-100	40-65	15-35
	14-45	Silty clay loam, silty clay.	CH, CL	A-7	0	0-5	100	95-100	90-100	85-100	40-70	15-40
	45-60	Silty clay loam, silt loam, silty clay.	CL, CH	A-7, A-6	0	0-5	95-100	95-100	90-100	75-98	30-60	15-30

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
343A:												
Kane------------	0-12	Silt loam------	CL, CL-ML	A-6, A-4	0	0	95-100	95-100	90-100	75-95	25-35	5-15
	12-22	Silty clay loam, clay loam.	CL, ML	A-6, A-7	0	0	95-100	85-100	80-100	80-95	35-45	10-20
	22-29	Sandy clay loam, sandy loam.	SC, CL	A-6, A-4	0-1	0-5	90-95	85-95	70-90	40-70	20-35	8-15
	29-60	Gravelly loamy sand, sand, gravel.	SP, GP, SP-SM, GP-GM	A-1	0-1	0-10	50-90	30-80	10-30	2-12	0-5	NP
344A:												
Harvard---------	0-9	Silt loam------	CL	A-4, A-6	0	0	100	95-100	90-100	85-100	30-40	8-15
	9-30	Silty clay loam, silt loam.	ML, CL	A-6, A-7	0	0	100	90-100	90-100	85-100	35-45	10-20
	30-56	Clay loam, silt loam, sandy loam.	ML, CL	A-4, A-6, A-7	0	0-3	95-100	85-95	75-90	55-85	30-45	5-20
	56-69	Stratified clay loam to sand.	SM, CL-ML, SC-SM, CL	A-2, A-4, A-6, A-7	0	0-5	90-100	80-95	40-90	15-70	20-45	NP-20
344B:												
Harvard---------	0-9	Silt loam------	CL	A-4, A-6	0	0	100	95-100	90-100	85-100	30-40	8-15
	9-30	Silty clay loam, silt loam.	ML, CL	A-6, A-7	0	0	100	90-100	90-100	85-100	35-45	10-20
	30-56	Clay loam, silt loam, sandy loam.	ML, CL	A-4, A-6, A-7	0	0-3	95-100	85-95	75-90	55-85	30-45	5-20
	56-69	Stratified clay loam to sand.	SM, CL-ML, SC-SM, CL	A-2, A-4, A-6, A-7	0	0-5	90-100	80-95	40-90	15-70	20-45	NP-20
361B:												
Kidder----------	0-11	Loam-----------	ML, CL, SM, SC	A-4	0	0	75-100	75-100	70-100	45-90	20-30	3-10
	11-28	Clay loam, sandy clay loam, loam.	CL, SC	A-6, A-4, A-2	0	0-5	75-100	75-100	55-95	25-80	20-40	8-25
	28-60	Sandy loam, gravelly sandy loam, fine sandy loam.	SM, GM	A-2, A-4, A-1	0	3-10	50-90	50-90	30-80	15-50	0-14	NP

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
361C:												
Kidder----------	0-11	Loam-----------	ML, CL, SM, SC	A-4	0	0	75-100	75-100	70-100	45-90	20-30	3-10
	11-28	Clay loam, sandy clay loam, loam.	CL, SC	A-6, A-4, A-2	0	0-5	75-100	75-100	55-95	25-80	20-40	8-25
	28-60	Sandy loam, gravelly sandy loam, fine sandy loam.	SM, GM	A-2, A-4, A-1	0	3-10	50-90	50-90	30-80	15-50	0-14	NP
361C2:												
Kidder----------	0-11	Loam-----------	ML, CL, SM, SC	A-4	0	0	75-100	75-100	70-100	45-90	20-30	3-10
	11-28	Clay loam, sandy clay loam, loam.	CL, SC	A-6, A-4, A-2	0	0-5	75-100	75-100	55-95	25-80	20-40	8-25
	28-60	Sandy loam, gravelly sandy loam, fine sandy loam.	SM, GM	A-2, A-4, A-1	0	3-10	50-90	50-90	30-80	15-50	0-14	NP
361C3:												
Kidder----------	0-7	Clay loam------	CL	A-6, A-4	0	0-5	75-100	75-100	70-95	50-80	25-40	8-20
	7-23	Clay loam, sandy clay loam, loam.	CL, SC	A-6, A-4, A-2	0	0-5	75-100	75-100	55-95	25-80	20-40	8-25
	23-60	Sandy loam, gravelly sandy loam, fine sandy loam.	SM, GM	A-2, A-4, A-1	0	3-10	50-90	50-90	30-80	15-50	0-14	NP
361D2:												
Kidder----------	0-11	Loam-----------	ML, CL, SM, SC	A-4	0	0	75-100	75-100	70-100	45-90	20-30	3-10
	11-28	Clay loam, sandy clay loam, loam.	CL, SC	A-6, A-4, A-2	0	0-5	75-100	75-100	55-95	25-80	20-40	8-25
	28-60	Sandy loam, gravelly sandy loam, fine sandy loam.	SM, GM	A-2, A-4, A-1	0	3-10	50-90	50-90	30-80	15-50	0-14	NP

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
361D3:												
Kidder----------	0-7	Clay loam	CL	A-6, A-4	0	0-5	75-100	75-100	70-95	50-80	25-40	8-20
	7-23	Clay loam, sandy clay loam, loam.	CL, SC	A-6, A-4, A-2	0	0-5	75-100	75-100	55-95	25-80	20-40	8-25
	23-60	Sandy loam, gravelly sandy loam, fine sandy loam.	SM, GM	A-2, A-4, A-1	0	3-10	50-90	50-90	30-80	15-50	0-14	NP
361E:												
Kidder----------	0-11	Loam-----------	ML, CL, SM, SC	A-4	0	0	75-100	75-100	70-100	45-90	20-30	3-10
	11-28	Clay loam, sandy clay loam, loam.	CL, SC	A-6, A-4, A-2	0	0-5	75-100	75-100	55-95	25-80	20-40	8-25
	28-60	Sandy loam, gravelly sandy loam, fine sandy loam.	SM, GM	A-2, A-4, A-1	0	3-10	50-90	50-90	30-80	15-50	0-14	NP
361E2:												
Kidder----------	0-11	Loam-----------	ML, CL, SM, SC	A-4	0	0	75-100	75-100	70-100	45-90	20-30	3-10
	11-28	Clay loam, sandy clay loam, loam.	CL, SC	A-6, A-4, A-2	0	0-5	75-100	75-100	55-95	25-80	20-40	8-25
	28-60	Sandy loam, gravelly sandy loam, fine sandy loam.	SM, GM	A-2, A-4, A-1	0	3-10	50-90	50-90	30-80	15-50	0-14	NP
361F:												
Kidder----------	0-11	Silt loam------	ML, CL, SM, SC	A-4	0	0	75-100	75-100	70-100	45-90	20-30	3-10
	11-28	Clay loam, sandy clay loam, loam.	CL, SC	A-6, A-4, A-2	0	0-5	75-100	75-100	55-95	25-80	20-40	8-25
	28-60	Sandy loam, gravelly sandy loam, fine sandy loam.	SM, GM	A-2, A-4, A-1	0	3-10	50-90	50-90	30-80	15-50	0-14	NP

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
363B:												
Griswold--------	0-10	Loam-----------	CL-ML, CL	A-4, A-6	0	0	95-100	95-100	90-100	70-90	20-30	5-15
	10-24	Loam, sandy clay loam, clay loam.	CL-ML, CL, SC-SM, SC	A-6, A-4	0	0-5	95-100	90-100	80-90	45-80	20-35	5-15
	24-27	Sandy loam, loam, sandy clay loam.	SC, SC-SM, CL-ML, CL	A-2, A-4, A-6	0-1	0-10	85-95	80-95	60-85	30-55	20-30	5-15
	27-60	Sandy loam, gravelly sandy loam.	SM, SC, SC-SM	A-2, A-4	0-1	0-10	85-95	65-90	50-75	20-45	10-25	NP-10
363C2:												
Griswold--------	0-10	Loam-----------	CL-ML, CL	A-4, A-6	0	0	95-100	95-100	90-100	70-90	20-30	5-15
	10-24	Loam, sandy clay loam, clay loam.	CL-ML, CL, SC-SM, SC	A-6, A-4	0	0-5	95-100	90-100	80-90	45-80	20-35	5-15
	24-27	Sandy loam, loam, sandy clay loam.	SC, SC-SM, CL-ML, CL	A-2, A-4, A-6	0-1	0-10	85-95	80-95	60-85	30-55	20-30	5-15
	27-60	Sandy loam, gravelly sandy loam.	SM, SC, SC-SM	A-2, A-4	0-1	0-10	85-95	65-90	50-75	20-45	10-25	NP-10
363D2:												
Griswold--------	0-10	Loam-----------	CL-ML, CL	A-4, A-6	0	0	95-100	95-100	90-100	70-90	20-30	5-15
	10-24	Loam, sandy clay loam, clay loam.	CL-ML, CL, SC-SM, SC	A-6, A-4	0	0-5	95-100	90-100	80-90	45-80	20-35	5-15
	24-27	Sandy loam, loam, sandy clay loam.	SC, SC-SM, CL-ML, CL	A-2, A-4, A-6	0-1	0-10	85-95	80-95	60-85	30-55	20-30	5-15
	27-60	Sandy loam, gravelly sandy loam.	SM, SC, SC-SM	A-2, A-4	0-1	0-10	85-95	65-90	50-75	20-45	10-25	NP-10
369A:												
Waupecan--------	0-13	Silt loam------	CL	A-4, A-6	0	0	100	100	90-100	85-95	20-35	8-15
	13-38	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	100	95-100	85-95	35-45	15-25
	38-55	Stratified loam to gravelly loamy sand.	SM, SC, ML, CL	A-2, A-4	0	0	90-100	65-100	50-70	25-65	0-20	NP-10
	55-70	Sand and gravel, very gravelly sandy loam, sand.	GP, SP, SP-SM, GP-GM	A-1	0-5	10-35	40-95	30-85	30-50	0-15	0-14	NP

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
369B:												
Waupecan--------	0-13	Silt loam------	CL	A-4, A-6	0	0	100	100	90-100	85-95	20-35	8-15
	13-38	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	100	95-100	85-95	35-45	15-25
	38-55	Stratified loam to gravelly loamy sand.	SM, SC, ML, CL	A-2, A-4	0	0	90-100	65-100	50-70	25-65	0-20	NP-10
	55-70	Sand and gravel, very gravelly sandy loam, sand.	GP, SP, SP-SM, GP-GM	A-1	0-5	10-35	40-95	30-85	30-50	0-15	0-14	NP
379A:												
Dakota----------	0-11	Loam-----------	CL	A-4, A-6	0	0	95-100	85-100	75-95	50-75	25-35	7-15
	11-30	Loam, sandy clay loam, clay loam.	CL, SC	A-4, A-6	0	0	95-100	85-100	70-100	35-80	25-40	9-20
	30-34	Sandy loam, loamy sand, gravelly loamy coarse sand.	SM, SP, GM, GP	A-2, A-4, A-1, A-3	0-1	0-5	55-100	45-100	20-75	2-40	0-21	NP-4
	34-60	Sand, gravelly coarse sand, loamy sand.	SP, GP, GM, SM	A-1, A-3, A-2	0-1	0-5	50-100	45-100	20-75	2-30	0-14	NP
379B:												
Dakota----------	0-11	Loam-----------	CL	A-4, A-6	0	0	95-100	85-100	75-95	50-75	25-35	7-15
	11-30	Loam, sandy clay loam, clay loam.	CL, SC	A-4, A-6	0	0	95-100	85-100	70-100	35-80	25-40	9-20
	30-34	Sandy loam, loamy sand, gravelly loamy coarse sand.	SM, SP, GM, GP	A-2, A-4, A-1, A-3	0-1	0-5	55-100	45-100	20-75	2-40	0-21	NP-4
	34-60	Sand, gravelly coarse sand, loamy sand.	SP, GP, GM, SM	A-1, A-3, A-2	0-1	0-5	50-100	45-100	20-75	2-30	0-14	NP
488A:												
Hooppole--------	0-17	Loam-----------	CL	A-4, A-6	0	0	100	95-100	80-100	55-85	25-35	7-17
	17-44	Clay loam, loam, silt loam.	CL	A-6, A-7	0	0	95-100	90-100	85-95	65-85	30-45	10-20
	44-60	Loamy sand, sand.	SM, SP-SM	A-2, A-3	0	0	95-100	85-100	50-75	5-25	---	NP

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
503B:												
Rockton---------	0-14	Silt loam------	ML, CL-ML, CL	A-4	0	0	90-100	90-100	85-95	50-75	25-35	5-10
	14-35	Loam, sandy clay loam, clay loam.	SC, CL, CL-ML, SC-SM	A-4, A-6, A-7	0	0-5	95-100	90-100	70-100	40-75	25-45	5-20
	35-40	Unweathered bedrock.	---	---	0	0	0	0	0	0	---	NP
512A:												
Danabrook-------	0-13	Silt loam------	CL	A-4, A-6	0	0	100	100	97-99	92-96	28-36	9-16
	13-33	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	98-100	94-96	86-94	34-44	14-22
	33-50	Clay loam, loam, sandy clay loam.	CL, SC	A-6, A-7	0	0-2	95-100	88-98	75-94	45-79	30-43	11-21
	50-60	Loam, sandy loam.	CL, SC	A-6, A-4	0	0-3	90-100	85-95	67-88	40-68	25-30	7-11
512B:												
Danabrook-------	0-13	Silt loam------	CL	A-4, A-6	0	0	100	100	97-99	92-96	28-36	9-16
	13-33	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	98-100	94-96	86-94	34-44	14-22
	33-50	Clay loam, loam, sandy clay loam.	CL, SC	A-6, A-7	0	0-2	95-100	88-98	75-94	45-79	30-43	11-21
	50-60	Loam, sandy loam.	CL, SC	A-6, A-4	0	0-3	90-100	85-95	67-88	40-68	25-30	7-11
523A:												
Dunham----------	0-12	Silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	85-95	30-50	15-30
	12-35	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	98-100	90-100	85-95	35-45	15-25
	35-44	Clay loam, silt loam, gravelly sandy loam.	CL, SC	A-6, A-4, A-2	0	0-5	90-100	80-100	55-90	30-80	25-40	8-20
	44-60	Gravelly sand, extremely gravelly coarse sand.	GM, GP-GM, SM, SP-SM	A-1	0-3	0-10	40-90	30-85	10-40	2-25	0-14	NP

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
526A:												
Grundelein------	0-11	Silt loam------	CL	A-4, A-6	0	0	100	100	90-100	85-100	30-40	8-15
	11-33	Silty clay loam, silt loam.	CL, ML	A-6, A-7	0	0	100	98-100	90-100	80-100	35-50	10-25
	33-39	Stratified sandy loam to silty clay loam.	CL, SC	A-6, A-4, A-2-4	0	0-5	90-100	80-100	55-90	30-80	25-40	8-20
	39-60	Gravelly sand, extremely gravelly coarse sand, gravelly sandy loam.	GM, GP-GM, SM, SP-SM	A-1	0-3	0-10	40-90	30-85	10-50	2-25	0-14	NP
527B:												
Kidami----------	0-10	Silt loam------	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	80-95	55-80	20-35	5-15
	10-37	Loam, clay loam	CL	A-6, A-7-6	0	0-2	95-100	90-100	75-95	50-75	25-45	10-25
	37-45	Loam-----------	CL	A-4, A-6	0	0-2	90-100	85-98	70-90	50-70	25-35	8-15
	45-60	Loam, sandy loam.	CL, CL-ML, SM, SC	A-4, A-6	0	0-3	90-100	85-95	65-90	40-65	15-30	3-15
527C:												
Kidami----------	0-10	Silt loam------	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	80-95	55-80	20-35	5-15
	10-37	Loam, clay loam	CL	A-6, A-7-6	0	0-2	95-100	90-100	75-95	50-75	25-45	10-25
	37-45	Loam-----------	CL	A-4, A-6	0	0-2	90-100	85-98	70-90	50-70	25-35	8-15
	45-60	Loam, sandy loam.	CL, CL-ML, SM, SC	A-4, A-6	0	0-3	90-100	85-95	65-90	40-65	15-30	3-15
527C2:												
Kidami----------	0-10	Loam-----------	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	80-95	55-80	20-35	5-15
	10-37	Loam, clay loam	CL	A-6, A-7-6	0	0-2	95-100	90-100	75-95	50-75	25-45	10-25
	37-45	Loam-----------	CL	A-4, A-6	0	0-2	90-100	85-98	70-90	50-70	25-35	8-15
	45-60	Loam, sandy loam.	CL, CL-ML, SM, SC	A-4, A-6	0	0-3	90-100	85-95	65-90	40-65	15-30	3-15
527D:												
Kidami----------	0-10	Silt loam------	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	80-95	55-80	20-35	5-15
	10-37	Loam, clay loam	CL	A-6, A-7-6	0	0-2	95-100	90-100	75-95	50-75	25-45	10-25
	37-45	Loam-----------	CL	A-4, A-6	0	0-2	90-100	85-98	70-90	50-70	25-35	8-15
	45-60	Loam, sandy loam.	CL, CL-ML, SM, SC	A-4, A-6	0	0-3	90-100	85-95	65-90	40-65	15-30	3-15

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
527D2:												
Kidami----------	0-10	Loam-----------	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	80-95	55-80	20-35	5-15
	10-37	Loam, clay loam	CL	A-6, A-7-6	0	0-2	95-100	90-100	75-95	50-75	25-45	10-25
	37-45	Loam-----------	CL	A-4, A-6	0	0-2	90-100	85-98	70-90	50-70	25-35	8-15
	45-60	Loam, sandy loam.	CL, CL-ML, SM, SC	A-4, A-6	0	0-3	90-100	85-95	65-90	40-65	15-30	3-15
527D3:												
Kidami----------	0-5	Clay loam------	CL	A-6, A-7-6	0	0-2	95-100	90-100	75-95	55-80	30-45	10-25
	5-22	Loam, clay loam	CL	A-6, A-7-6	0	0-2	95-100	90-100	75-95	50-75	25-45	10-25
	22-27	Loam-----------	CL	A-4, A-6	0	0-2	90-100	85-98	70-90	50-70	25-35	8-15
	27-60	Loam, sandy loam.	CL, CL-ML, SM, SC	A-4, A-6	0	0-3	90-100	85-95	65-90	40-65	15-30	3-15
528A:												
Lahoguess-------	0-14	Loam-----------	CL, CL-ML, ML	A-4, A-6	0	0	100	98-100	80-100	55-85	20-35	3-15
	14-38	Clay loam, loam	CL, SC	A-4, A-6	0	0	100	95-100	80-95	45-85	25-40	7-20
	38-46	Loam, sandy loam, loamy sand.	CL, SC, SM, ML	A-6, A-2	0	0	95-100	90-100	60-90	25-70	15-30	2-15
	46-60	Loamy sand, sand.	SM, SP-SM, SP	A-2, A-3, A-1-b	0	0-3	90-100	85-100	15-60	3-20	---	NP
529A:												
Selmass---------	0-15	Loam-----------	CL	A-4, A-6	0	0	100	98-100	80-100	55-85	25-35	7-17
	15-42	Clay loam, loam	CL, SC	A-6	0	0	100	95-100	80-95	45-85	25-35	10-20
	42-47	Loam, sandy loam, loamy sand.	CL, SC, SM, ML	A-6, A-4, A-2	0	0	95-100	90-100	60-90	25-70	15-30	2-15
	47-60	Loamy sand, sand.	SM, SP-SM, SP	A-2, A-3, A-1-b	0	0-3	90-100	85-100	15-60	3-20	---	NP
530B:												
Ozaukee---------	0-7	Silt loam------	CL	A-4, A-6	0	0-1	98-100	98-100	90-100	85-95	25-35	7-15
	7-11	Silt loam, silty clay loam.	CL	A-6, A-7-6	0	0-1	98-100	98-100	90-100	85-95	30-45	10-25
	11-31	Silty clay loam, clay, silty clay.	CL, CH	A-7	0-1	0-10	90-98	85-98	85-95	80-95	45-65	25-40
	31-60	Silty clay loam, clay loam.	CL	A-6, A-7-6	0-1	0-10	90-98	85-95	85-95	80-90	35-45	15-25

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
530C2:												
Ozaukee---------	0-7	Silt loam------	CL	A-4, A-6	0	0-1	98-100	98-100	90-100	85-95	25-35	7-15
	7-11	Silt loam, silty clay loam.	CL	A-6, A-7-6	0	0-1	98-100	98-100	90-100	85-95	30-45	10-25
	11-31	Silty clay loam, clay, silty clay.	CL, CH	A-7	0-1	0-10	90-98	85-98	85-95	80-95	45-65	25-40
	31-60	Silty clay loam, clay loam.	CL	A-6, A-7-6	0-1	0-10	90-98	85-95	85-95	80-90	35-45	15-25
530C3:												
Ozaukee---------	0-9	Silty clay loam	CL	A-6, A-7	0	0-1	90-98	85-98	85-95	80-95	35-50	15-25
	9-27	Silty clay loam, clay, silty clay.	CL, CH	A-7	0-1	0-10	90-98	85-98	85-95	80-95	45-65	25-40
	27-60	Silty clay loam, clay loam.	CL	A-6, A-7-6	0-1	0-10	90-98	85-95	85-95	80-90	35-45	15-25
530D2:												
Ozaukee---------	0-7	Silt loam------	CL	A-4, A-6	0	0-1	98-100	98-100	90-100	85-95	25-35	7-15
	7-11	Silt loam, silty clay loam.	CL	A-6, A-7-6	0	0-1	98-100	98-100	90-100	85-95	30-45	10-25
	11-31	Silty clay loam, clay, silty clay.	CL, CH	A-7	0-1	0-10	90-98	85-98	85-95	80-95	45-65	25-40
	31-60	Silty clay loam, clay loam.	CL	A-6, A-7-6	0-1	0-10	90-98	85-95	85-95	80-90	35-45	15-25
530D3:												
Ozaukee---------	0-9	Silty clay loam	CL	A-6, A-7	0	0-1	90-98	85-98	85-95	80-95	35-50	15-25
	9-27	Silty clay loam, clay, silty clay.	CL, CH	A-7	0-1	0-10	90-98	85-98	85-95	80-95	45-65	25-40
	27-60	Silty clay loam, clay loam.	CL	A-6, A-7-6	0-1	0-10	90-98	85-95	85-95	80-90	35-45	15-25

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
530E:												
Ozaukee---------	0-7	Silt loam------	CL	A-4, A-6	0	0-1	98-100	98-100	90-100	85-95	25-35	7-15
	7-11	Silt loam, silty clay loam.	CL	A-6, A-7-6	0	0-1	98-100	98-100	90-100	85-95	30-45	10-25
	11-31	Silty clay loam, clay, silty clay.	CL, CH	A-7	0-1	0-10	90-98	85-98	85-95	80-95	45-65	25-40
	31-60	Silty clay loam, clay loam.	CL	A-6, A-7-6	0-1	0-10	90-98	85-95	85-95	80-90	35-45	15-25
543B:												
Piscasaw--------	0-12	Silt loam.	CL	A-4, A-6	0	0	100	100	95-100	90-100	28-36	9-16
	12-26	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	98-100	90-100	75-90	34-44	14-22
	26-51	Clay loam, sandy clay loam, loam.	CL, SC	A-6, A-7	0	0-2	95-100	88-100	75-95	45-85	30-43	11-21
	51-60	Loam, sandy loam, fine sandy loam.	CL, SC	A-6, A-4	0	0-3	90-100	85-97	65-90	40-70	25-30	7-11
544A:												
Torox-----------	0-10	Silt loam------	CL	A-4, A-6	0	0	100	100	97-99	92-96	28-36	9-16
	10-25	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	95-100	94-96	86-94	34-44	14-22
	25-42	Clay loam, sandy clay loam, loam.	CL, SC	A-6, A-7	0	0-2	95-100	90-98	75-94	45-79	30-43	11-21
	42-65	Loam, sandy loam.	CL, SC	A-6, A-4	0	0-3	90-100	85-97	67-88	40-68	25-30	7-11
545A:												
Windere---------	0-9	Silt loam------	CL	A-4, A-6	0	0	100	100	97-99	92-96	28-36	9-16
	9-31	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	98-100	94-96	86-94	34-44	14-22
	31-50	Clay loam, loam	CL, SC	A-6, A-7	0	0-2	95-100	90-98	75-94	45-79	30-43	11-21
	50-65	Loam, sandy loam.	CL, SC	A-6, A-4	0	0-3	90-100	85-97	67-88	40-68	25-30	7-11

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
545B:												
Windere---------	0-9	Silt loam------	CL	A-4, A-6	0	0	100	100	97-99	92-96	28-36	9-16
	9-31	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	98-100	94-96	86-94	34-44	14-22
	31-50	Clay loam, loam	CL, SC	A-6, A-7	0	0-2	95-100	90-98	75-94	45-79	30-43	11-21
	50-65	Loam, sandy loam.	CL, SC	A-6, A-4	0	0-3	90-100	85-97	67-88	40-68	25-30	7-11
557A:												
Millstream------	0-14	Silt loam------	CL	A-4, A-6	0	0	100	100	90-100	85-100	30-40	8-15
	14-27	Silty clay loam, silt loam.	CL, ML	A-6, A-7	0	0	100	98-100	90-100	80-100	35-50	10-25
	27-47	Stratified silty clay loam to loamy sand.	CL, SC	A-6, A-4, A-2-4	0	0-5	90-100	70-100	50-90	30-80	25-40	8-20
	47-60	Gravelly loamy sand, extremely gravelly coarse sand.	GM, GP-GM, SM, SP-SM	A-1	0-3	0-10	55-90	30-85	20-50	2-25	0-14	NP
570A:												
Martinsville----	0-9	Silt loam------	CL, CL-ML, ML	A-4, A-6	0	0	100	85-100	70-100	50-90	23-40	3-20
	9-37	Clay loam, loam, sandy clay loam.	SC-SM, CL-ML, CL, SC	A-2, A-4, A-6, A-7	0	0	95-100	85-100	70-100	30-75	20-50	5-30
	37-58	Loam, sandy clay loam, sandy loam.	SM, SC-SM, CL-ML, SC	A-4, A-2-4, A-6, A-2-6	0	0	95-100	85-100	50-95	25-70	10-40	NP-20
	58-64	Stratified silt loam to sand.	SM, SC, CL, ML	A-4, A-2-4, A-1-b	0	0	95-100	85-100	40-95	20-75	0-30	NP-10
570B:												
Martinsville----	0-9	Silt loam------	CL, CL-ML, ML	A-4, A-6	0	0	100	85-100	70-100	50-90	23-40	3-20
	9-37	Clay loam, loam, sandy clay loam.	SC-SM, CL-ML, CL, SC	A-2, A-4, A-6, A-7	0	0	95-100	85-100	70-100	30-75	20-50	5-30
	37-58	Loam, sandy clay loam, sandy loam	SM, SC-SM, CL-ML, SC	A-4, A-2-4, A-6, A-2-6	0	0	95-100	85-100	50-95	25-70	10-40	NP-20
	58-64	Stratified silt loam to sand.	SM, SC, CL, ML	A-4, A-2-4, A-1-b	0	0	95-100	85-100	40-95	20-75	0-30	NP-10

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
570C2:												
Martinsville----	0-12	Silt loam------	ML, CL-ML, CL	A-4	0	0	100	85-100	75-100	65-90	0-25	3-8
	12-37	Clay loam, silty clay loam, sandy clay loam.	CL, SC	A-2-4, A-2-6, A-4, A-6	0	0	95-100	85-100	70-100	30-95	25-40	7-15
	37-58	Sandy loam, loam, sandy clay loam.	SC-SM, SC, CL-ML, CL	A-2-4, A-2-6, A-4, A-6	0	0	95-100	85-100	55-95	30-95	20-30	5-11
	58-64	Stratified sand to silt loam.	SM, SC-SM, ML, CL-ML	A-1, A-2-4, A-4	0	0	95-100	85-100	45-95	10-75	0-25	NP-8
618E:												
Senachwine------	0-9	Silt loam------	CL, CL-ML, ML	A-4, A-6	0	0	95-100	90-100	80-95	60-85	20-30	5-15
	9-31	Clay loam, silty clay loam.	CL	A-6, A-7-6	0	0	90-98	85-98	85-95	55-85	35-45	15-20
	31-40	Loam, fine sandy loam.	CL, CL-ML	A-4, A-6	0-1	0-3	90-98	85-98	75-95	50-75	30-35	10-15
	40-60	Loam, fine sandy loam.	CL, CL-ML	A-4, A-6	0-1	0-3	90-98	85-98	75-95	50-75	25-35	5-15
618F:												
Senachwine------	0-9	Silt loam------	CL, CL-ML, ML	A-4, A-6	0	0	95-100	90-100	80-95	60-85	20-30	5-15
	9-31	Clay loam, silty clay loam.	CL	A-6, A-7-6	0	0	90-98	85-98	85-95	55-85	35-45	15-20
	31-40	Loam, fine sandy loam.	CL, CL-ML	A-4, A-6	0-1	0-3	90-98	85-98	75-95	50-75	30-35	10-15
	40-60	Loam, fine sandy loam.	CL, CL-ML	A-4, A-6	0-1	0-3	90-98	85-98	75-95	50-75	25-35	5-15
624B:												
Caprell---------	0-10	Silt loam------	CL, ML, CL-ML	A-4, A-6	0	0	95-100	90-100	80-95	55-80	20-35	5-15
	10-38	Loam, clay loam	CL	A-6	0	0-2	95-100	90-100	75-95	50-75	25-45	10-25
	38-47	Loam-----------	CL-ML, CL	A-4, A-6	0	0-2	90-100	85-98	70-90	50-70	25-35	8-15
	47-60	Loam, sandy loam.	CL, CL-ML, SM	A-4	0	0-3	90-100	85-98	65-90	40-65	15-30	3-15
624C2:												
Caprell---------	0-10	Silt loam------	CL, ML, CL-ML	A-4, A-6	0	0	95-100	90-100	80-95	55-80	20-35	5-15
	10-38	Loam, clay loam	CL	A-6	0	0-2	95-100	90-100	75-95	50-75	25-45	10-25
	38-47	Loam-----------	CL-ML, CL	A-4, A-6	0	0-2	90-100	85-98	70-90	50-70	25-35	8-15
	47-60	Loam, sandy loam.	CL, CL-ML, SM	A-4	0	0-3	90-100	85-98	65-90	40-65	15-30	3-15

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
624D2:												
Caprell---------	0-10	Silt loam------	CL, ML, CL-ML	A-4, A-6	0	0	95-100	90-100	80-95	55-80	20-35	5-15
	10-38	Loam, clay loam	CL	A-6	0	0-2	95-100	90-100	75-95	50-75	25-45	10-25
	38-47	Loam-----------	CL-ML, CL	A-4, A-6	0	0-2	90-100	85-98	70-90	50-70	25-35	8-15
	47-60	Loam, sandy loam.	CL, CL-ML, SM	A-4	0	0-3	90-100	85-98	65-90	40-65	15-30	3-15
624E:												
Caprell---------	0-10	Silt loam------	CL, ML, CL-ML	A-4, A-6	0	0	95-100	90-100	80-95	55-80	20-35	5-15
	10-38	Loam, clay loam	CL	A-6	0	0-2	95-100	90-100	75-95	50-75	25-45	10-25
	38-47	Loam-----------	CL-ML, CL	A-4, A-6	0	0-2	90-100	85-98	70-90	50-70	25-35	8-15
	47-60	Loam, sandy loam.	CL, CL-ML, SM	A-4	0	0-3	90-100	85-98	65-90	40-65	15-30	3-15
625A:												
Geryune---------	0-14	Silt loam------	CL, CL-ML	A-4, A-6	0	0	100	100	97-99	92-96	28-36	9-16
	14-28	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	98-100	94-96	86-94	34-44	14-22
	28-43	Clay loam, loam, sandy clay loam.	CL, SC	A-6, A-7	0	0-2	95-100	85-98	75-94	45-79	30-43	11-21
	43-60	Loam, sandy loam.	CL, SC	A-6, A-4	0	0-3	90-100	85-98	67-88	40-68	25-30	7-11
625B:												
Geryune---------	0-14	Silt loam------	CL, CL-ML	A-4, A-6	0	0	100	100	97-99	92-96	28-36	9-16
	14-28	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	98-100	94-96	86-94	34-44	14-22
	28-43	Clay loam, loam, sandy clay loam.	CL, SC	A-6, A-7	0	0-2	95-100	85-98	75-94	45-79	30-43	11-21
	43-60	Loam, sandy loam.	CL, SC	A-6, A-4	0	0-3	90-100	85-98	67-88	40-68	25-30	7-11
626A:												
Kish-----------	0-11	Loam-----------	CL	A-4, A-6	0	0	100	95-100	80-100	55-85	25-35	7-17
	11-47	Loam, clay loam, sandy loam.	CL, SC	A-6	0	0-1	95-100	90-100	75-95	45-85	24-36	11-19
	47-60	Stratified sandy loam to silt loam.	SC-SM, SC, CL-ML, CL	A-4, A-6	0	0-2	90-100	85-98	60-90	40-70	15-35	5-20

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
635A:												
Lismod----------	0-11	Silt loam------	CL, ML	A-4, A-6	0	0	100	100	97-99	90-96	28-36	9-15
	11-36	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	98-100	94-97	85-95	34-44	14-22
	36-39	Loam, clay loam, sandy clay loam.	CL	A-6, A-7	0	0-2	95-100	87-98	80-95	65-85	30-43	11-21
	39-60	Loam, sandy loam.	CL, SC	A-6, A-4	0	0-3	90-100	85-98	70-90	45-80	25-30	7-11
635B:												
Lismod----------	0-11	Silt loam------	CL, ML	A-4, A-6	0	0	100	100	97-99	90-96	28-36	9-15
	11-36	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	98-100	94-97	85-95	34-44	14-22
	36-39	Loam, clay loam, sandy clay loam.	CL	A-6, A-7	0	0-2	95-100	87-98	80-95	65-85	30-43	11-21
	39-60	Loam, sandy loam.	CL, SC	A-6, A-4	0	0-3	90-100	85-98	70-90	45-80	25-30	7-11
636B:												
Parmod----------	0-12	Silt loam------	CL, CL-ML	A-4, A-6	0	0	95-100	96-100	80-100	50-90	20-30	5-15
	12-38	Clay loam, loam, silty clay loam.	CL	A-4, A-6	0	0-2	90-100	90-100	75-95	50-80	25-40	10-25
	38-60	Loam, sandy loam.	CL-ML, ML, CL	A-4	0	0-3	85-97	85-97	70-85	50-65	10-25	3-15
656B:												
Octagon---------	0-13	Silt loam------	CL, CL-ML, ML	A-4	0	0	100	95-100	80-95	55-75	20-30	3-10
	13-30	Clay loam, loam, silty clay loam.	CL	A-6	0	0	95-100	90-100	70-100	55-95	30-40	10-20
	30-60	Loam-----------	CL-ML, CL	A-4	0	0-3	85-95	85-98	65-95	50-65	0-25	4-10
656C2:												
Octagon---------	0-13	Silt loam------	CL, CL-ML, ML	A-4	0	0	100	95-100	80-95	55-75	20-30	3-10
	13-30	Clay loam, loam, silty clay loam.	CL	A-6	0	0	95-100	90-100	70-100	55-95	30-40	10-20
	30-60	Loam-----------	CL-ML, CL	A-4	0	0-3	85-95	85-98	65-95	50-65	0-25	4-10

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
791A:												
Rush------------	0-11	Silt loam------	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	70-90	20-30	5-15
	11-38	Silty clay loam, silt loam.	CL	A-6	0	0	100	100	90-100	70-100	30-40	10-20
	38-45	Clay loam, sandy clay loam, loam.	CL, SC	A-6, A-2-6	0	1-5	80-100	80-100	60-100	25-75	30-40	10-20
	45-60	Stratified sand to extremely gravelly coarse sand.	SP, SP-SM, GP, GP-GM	A-1	0-1	1-5	30-85	20-80	5-35	2-10	0-14	NP
791B:												
Rush------------	0-11	Silt loam------	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	70-90	20-30	5-15
	11-38	Silty clay loam, silt loam.	CL	A-6	0	0	100	100	90-100	70-100	30-40	10-20
	38-45	Clay loam, sandy clay loam, loam.	CL, SC	A-6, A-2-6	0	1-5	80-100	80-100	60-100	25-75	30-40	10-20
	45-60	Stratified sand to extremely gravelly coarse sand.	SP, SP-SM, GP, GP-GM	A-1	0-1	1-5	30-85	20-80	5-35	2-10	0-14	NP
791C2:												
Rush------------	0-11	Silt loam------	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	70-90	20-30	5-15
	11-38	Silty clay loam, silt loam.	CL	A-6	0	0	100	100	90-100	70-100	30-40	10-20
	38-45	Clay loam, sandy clay loam, loam.	CL, SC	A-6, A-2-6	0	1-5	80-100	80-100	60-100	25-75	30-40	10-20
	45-60	Stratified sand to extremely gravelly coarse sand.	SP, SP-SM, GP, GP-GM	A-1	0-1	1-5	30-85	20-80	5-35	2-10	0-14	NP
792A:												
Bowes-----------	0-13	Silt loam------	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	85-100	25-35	5-15
	13-43	Silty clay loam	CL	A-6, A-7	0	0	95-100	95-100	90-100	85-100	35-45	15-25
	43-51	Gravelly clay loam, gravelly sandy loam, gravelly loamy sand.	CL, SC, ML, SM	A-2, A-4, A-6	0-2	5-20	30-90	30-85	25-75	25-65	0-30	NP-15
	51-61	Sand and gravel	SP, SP-SM, GP, GP-GM	A-1	0-2	5-35	30-85	25-80	25-50	0-10	0-20	NP-3

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
792B:												
Bowes-----------	0-13	Silt loam------	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	85-100	25-35	5-15
	13-43	Silty clay loam	CL	A-6, A-7	0	0	95-100	95-100	90-100	85-100	35-45	15-25
	43-51	Gravelly clay loam, gravelly sandy loam, gravelly loamy sand.	CL, SC, ML, SM	A-2, A-4, A-6	0-2	5-20	30-90	30-85	25-75	25-65	0-30	NP-15
	51-61	Sand and gravel	SP, SP-SM, GP, GP-GM	A-1	0-2	5-35	30-85	25-80	25-50	0-10	0-20	NP-3
802B:												
Orthents,loamy--	0-8	Loam-----------	CL	A-6	0-1	0-5	95-100	90-100	85-95	60-90	20-40	10-20
	8-60	Loam, silt loam, clay loam.	CL	A-6	0-1	0-5	95-100	90-100	85-95	60-90	20-40	10-20
865:												
Pits, gravel.												
969E2:												
Casco-----------	0-8	Loam-----------	ML, CL-ML, CL	A-4	0	0-9	80-100	75-100	65-95	50-80	20-30	3-10
	8-17	Clay loam, sandy clay loam, gravelly loam.	SC, CL, GC	A-6, A-7, A-2	0-1	0-9	55-100	50-100	40-90	20-80	25-46	11-26
	17-60	Stratified sand to gravel.	GP, SP, GP-GM, SP-SM	A-1, A-3, A-2	0-3	0-30	25-100	20-85	10-75	2-10	0-14	NP
Rodman----------	0-11	Gravelly loam--	ML, CL, SM, SC	A-4	0	0-2	70-90	65-90	60-75	36-65	0-30	3-9
	11-14	Gravelly loam, sandy loam, loam.	ML, CL, SC, SM	A-4, A-2, A-1	0	0-2	70-85	60-85	40-75	20-55	0-30	NP-10
	14-60	Stratified sand to extremely gravelly coarse sand.	SP, SP-SM, GP, GP-GM	A-1	0-1	1-5	30-70	22-65	7-20	2-10	0-14	NP
969F:												
Casco-----------	0-8	Loam-----------	ML, CL-ML, CL	A-4	0	0-9	80-100	75-100	65-95	50-80	20-30	3-10
	8-17	Clay loam, sandy clay loam, gravelly loam.	SC, CL, GC	A-6, A-7, A-2	0-1	0-9	55-100	50-100	40-90	20-80	25-46	11-26
	17-60	Stratified sand to gravel.	GP, SP, GP-GM, SP-SM	A-1, A-3, A-2	0-3	0-30	25-100	20-85	10-75	2-10	0-14	NP

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
969F:												
Rodman----------	0-11	Gravelly loam--	ML, CL, SM, SC	A-4	0	0-2	70-90	65-90	60-75	36-65	0-30	3-9
	11-14	Gravelly loam, sandy loam, loam.	ML, CL, SC, SM	A-4, A-2, A-1	0	0-2	70-85	60-85	40-75	20-55	0-30	NP-10
	14-60	Stratified sand to extremely gravelly coarse sand.	SP, SP-SM, GP, GP-GM	A-1	0-1	1-5	30-70	22-65	7-20	2-10	0-14	NP
1067A:												
Harpster--------	0-18	Silt loam------	CL	A-6, A-7	0	0	100	95-100	95-100	90-100	30-45	10-25
	18-34	Silty clay loam	CL, CH	A-7	0	0	100	95-100	95-100	85-100	40-60	20-35
	34-43	Silty clay loam, silt loam, loam.	CL, CH	A-6, A-7	0	0	100	95-100	95-100	70-100	35-55	20-35
	43-60	Stratified sandy loam to clay loam.	CL, CL-ML, SC, SC-SM	A-4, A-6, A-7	0	0	100	95-100	95-100	45-95	20-50	5-25
1082A:												
Millington------	0-14	Silt loam------	ML, CL, OL	A-6, A-7, A-4	0	0	95-100	90-100	80-100	70-95	30-45	8-17
	14-37	Loam, silty clay loam, clay loam.	CL	A-7, A-6	0	0	95-100	85-100	80-100	70-95	28-50	10-22
	37-60	Stratified sandy loam to silty clay loam.	CL, CL-ML	A-6, A-7, A-4	0	0	85-100	85-100	80-100	60-95	20-45	5-20
1100A:												
Palms-----------	0-6	Muck-----------	PT	A-8	0	0	0	0	0	0	---	NP
	6-32	Muck-----------	PT	A-8	0	0	0	0	0	0	---	NP
	32-60	Clay loam, silty clay loam, gravelly sandy loam.	CL-ML, CL, SC, SC-SM	A-4, A-6, A-7, A-2	0	0	85-100	60-100	35-95	15-90	20-45	5-20
1103A:												
Houghton--------	0-7	Muck-----------	PT	A-8	0	0	0	0	0	0	---	NP
	7-60	Muck-----------	PT	A-8	0	0	0	0	0	0	---	NP

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
1153A:												
Pella-----------	0-14	Silty clay loam	CL	A-7	0	0	100	95-100	90-100	85-95	40-50	15-25
	14-39	Silty clay loam, silty clay, clay loam.	CL	A-6, A-7	0	0	100	95-100	90-100	85-95	30-50	15-30
	39-50	Stratified silty clay loam to sandy loam.	CL	A-6, A-7	0-1	0-5	95-100	90-100	85-95	60-90	25-45	10-25
	50-60	Stratified sandy loam to silty clay loam.	SC-SM, SC, CL, CL-ML	A-2, A-4, A-6	0-1	0-5	90-100	80-100	50-100	30-85	20-35	7-20
1206A:												
Thorp-----------	0-11	Silt loam------	CL	A-6, A-4	0	0	95-100	95-100	90-100	85-95	20-40	8-19
	11-22	Silt loam------	CL	A-4, A-6	0	0	95-100	95-100	90-100	85-95	25-35	7-15
	22-38	Silty clay loam, silt loam.	CL	A-7, A-6	0	0	95-100	95-100	90-100	85-95	35-50	13-27
	38-60	Silt loam, clay loam, sandy clay loam.	CL, SC	A-6, A-4, A-7	0	0	90-100	90-100	90-100	40-90	20-50	8-26
1210A:												
Lena------------	0-11	Sapric material	PT	A-8	0	0	0	0	0	0	---	NP
	11-60	Sapric material	PT	A-8	0	0	0	0	0	0	---	NP
1330A:												
Peotone---------	0-22	Silty clay loam	CH, CL	A-7	0	0	100	95-100	95-100	80-100	40-65	15-35
	22-43	Silty clay loam, silty clay.	CH, CL	A-7	0	0-5	100	95-100	90-100	85-100	40-70	15-40
	43-60	Silty clay loam, silt loam, silty clay.	CL, CH	A-7, A-6	0	0-5	95-100	95-100	90-100	75-98	30-60	15-30
1488A:												
Hooppole--------	0-17	Loam-----------	CL	A-4, A-6	0	0	100	95-100	80-100	55-85	25-35	7-17
	17-44	Clay loam, loam, silt loam.	CL	A-6, A-7	0	0	95-100	90-100	85-95	65-85	30-45	10-20
	44-60	Loamy sand, sand.	SM, SP-SM	A-2, A-3	0	0	95-100	85-100	50-75	5-25	---	NP

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
1529A:												
Selmass---------	0-15	Loam-----------	CL	A-4, A-6	0	0	100	98-100	80-100	55-85	25-35	7-17
	15-42	Clay loam, loam	CL, SC	A-6	0	0	100	95-100	80-95	45-85	25-35	10-20
	42-47	Loam, sandy loam, loamy sand.	CL, SC, SM, ML	A-6, A-4, A-2	0	0	95-100	90-100	60-90	25-70	15-30	2-15
	47-60	Loamy sand, sand.	SM, SP-SM, SP	A-2, A-3, A-1-b	0	0-3	90-100	85-100	15-60	3-20	---	NP
1626A:												
Kish------------	0-11	Loam-----------	CL	A-4, A-6	0	0	100	95-100	80-100	55-85	25-35	7-17
	11-47	Loam, clay loam, sandy loam.	CL, SC	A-6	0	0-1	95-100	90-100	75-95	45-85	24-36	11-19
	47-60	Stratified sandy loam to silt loam.	SC-SM, SC, CL-ML, CL	A-4, A-6	0	0-2	90-100	85-98	60-90	40-70	15-35	5-20
1776A:												
Comfrey---------	0-7	Loam-----------	ML, OL, CL	A-6, A-4	0	0	100	100	85-100	55-90	30-40	5-15
	7-26	Clay loam, loam	OL, OH, MH, ML	A-7	0	0	100	100	85-100	65-85	45-60	12-25
	26-63	Clay loam, loam	CL	A-7, A-6	0	0	100	85-100	80-100	60-85	35-50	12-25
4103A:												
Houghton--------	0-7	Muck-----------	PT	A-8	0	0	0	0	0	0	---	NP
	7-60	Muck-----------	PT	A-8	0	0	0	0	0	0	---	NP
8082A:												
Millington------	0-14	Silt loam------	ML, CL, OL	A-6, A-7, A-4	0	0	95-100	90-100	80-100	70-95	30-45	8-17
	14-37	Loam, silty clay loam, clay loam.	CL	A-7, A-6	0	0	95-100	85-100	80-100	70-95	28-50	10-22
	37-60	Stratified sandy loam to silty clay loam.	CL, CL-ML	A-6, A-7, A-4	0	0	85-100	85-100	80-100	60-95	20-45	5-20
8776A:												
Comfrey---------	0-7	Loam-----------	ML, OL, CL	A-6, A-4	0	0	100	100	85-100	55-90	30-40	5-15
	7-26	Clay loam, loam	OL, OH, MH, ML	A-7	0	0	100	100	85-100	65-85	45-60	12-25
	26-63	Clay loam, loam	CL	A-7, A-6	0	0	100	85-100	80-100	60-85	35-50	12-25

Table 19.--Physical and Chemical Properties of the Soils

(Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated)

Map symbol and soil name	Depth	Clay	Cation-exchange capacity	Soil reaction	Calcium carbonate	Moist bulk density	Permea-bility	Available water capacity	Shrink-swell potential	Organic matter	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	meq/100g	pH	Pct	g/cc	In/hr	In/in		Pct					
59A:															
Lisbon----------	0-11	20-25	18.0-25.0	5.6-7.3	---	1.10-1.30	0.60-2.00	0.22-0.24	Low------	3.0-5.0	0.28	0.28	4	6	48
	11-36	25-35	16.0-25.0	5.6-7.8	---	1.15-1.35	0.60-2.00	0.18-0.22	Moderate	0.5-2.0	0.37	0.37			
	36-39	20-34	12.0-22.0	6.1-8.4	0-20	1.45-1.55	0.60-2.00	0.15-0.20	Low------	0.2-0.5	0.32	0.32			
	39-69	15-25	9.0-16.0	7.4-8.4	15-40	1.70-1.90	0.20-0.60	0.07-0.11	Low------	0.2-0.5	0.32	0.32			
59B:															
Lisbon----------	0-11	20-25	18.0-25.0	5.6-7.3	---	1.10-1.30	0.60-2.00	0.22-0.24	Low------	3.0-5.0	0.28	0.28	4	6	48
	11-36	25-35	16.0-25.0	5.6-7.8	---	1.15-1.35	0.60-2.00	0.18-0.22	Moderate	0.5-2.0	0.37	0.37			
	36-39	20-34	12.0-22.0	6.1-8.4	0-20	1.45-1.55	0.60-2.00	0.15-0.20	Low------	0.2-0.5	0.32	0.32			
	39-69	15-25	9.0-16.0	7.4-8.4	15-40	1.70-1.90	0.20-0.60	0.07-0.11	Low------	0.2-0.5	0.32	0.32			
60C2:															
La Rose---------	0-7	18-27	15.0-24.0	6.1-7.8	---	1.10-1.35	0.60-2.00	0.20-0.24	Moderate	2.0-4.0	0.28	0.28	3	6	48
	7-21	27-35	16.0-22.0	6.6-7.8	0-20	1.35-1.55	0.60-2.00	0.15-0.20	Moderate	0.0-0.5	0.32	0.32			
	21-60	15-25	11.0-17.0	7.4-8.4	15-40	1.70-1.90	0.20-0.60	0.09-0.11	Moderate	0.0-0.5	0.32	0.32			
62A:															
Herbert---------	0-8	20-27	16.0-24.0	5.6-7.3	---	1.10-1.30	0.60-2.00	0.22-0.24	Low------	2.0-4.0	0.32	0.32	5	6	48
	8-12	15-27	10.0-18.0	5.6-7.3	---	1.20-1.40	0.60-2.00	0.21-0.23	Low------	0.5-1.0	0.32	0.32			
	12-26	25-35	16.0-23.0	5.6-7.3	---	1.20-1.40	0.60-2.00	0.18-0.20	Moderate	0.2-1.0	0.37	0.37			
	26-36	22-35	16.0-22.0	6.1-8.4	0-20	1.35-1.55	0.60-2.00	0.10-0.14	Moderate	0.0-0.4	0.32	0.32			
	36-60	15-25	12.0-18.0	7.4-8.4	10-40	1.70-1.90	0.20-0.60	0.08-0.11	Low------	0.0-0.1	0.28	0.32			
67A:															
Harpster--------	0-18	27-35	26.0-33.0	7.4-8.4	10-40	1.05-1.25	0.60-2.00	0.21-0.24	Moderate	5.0-6.0	0.28	0.28	5	4L	86
	18-34	27-35	17.0-23.0	7.4-8.4	5-40	1.20-1.50	0.60-2.00	0.18-0.22	Moderate	0.5-1.0	0.28	0.28			
	34-43	22-35	13.0-22.0	7.4-8.4	5-40	1.25-1.55	0.60-2.00	0.17-0.22	Moderate	0.0-0.5	0.28	0.28			
	43-60	15-30	9.0-18.0	7.4-8.4	10-40	1.40-1.60	0.60-2.00	0.11-0.22	Low------	0.0-0.1	0.28	0.28			
87A:															
Dickinson-------	0-14	10-18	15.0-20.0	5.6-7.3	---	1.50-1.55	2.00-6.00	0.12-0.15	Low------	1.0-2.0	0.20	0.20	4	3	86
	14-26	10-15	15.0-20.0	5.1-6.5	---	1.45-1.55	2.00-6.00	0.12-0.15	Low------	0.5-1.0	0.20	0.20			
	26-38	4-10	5.0-10.0	5.1-6.5	---	1.55-1.65	6.00-20.00	0.08-0.10	Low------	0.0-0.5	0.17	0.17			
	38-60	4-10	5.0-10.0	5.6-7.3	---	1.60-1.70	6.00-20.00	0.02-0.04	Low------	0.0-0.5	0.15	0.15			
87B:															
Dickinson-------	0-14	10-18	15.0-20.0	5.6-7.3	---	1.50-1.55	2.00-6.00	0.12-0.15	Low------	1.0-2.0	0.20	0.20	4	3	86
	14-26	10-15	15.0-20.0	5.1-6.5	---	1.45-1.55	2.00-6.00	0.12-0.15	Low------	0.5-1.0	0.20	0.20			
	26-38	4-10	5.0-10.0	5.1-6.5	---	1.55-1.65	6.00-20.00	0.08-0.10	Low------	0.0-0.5	0.17	0.17			
	38-60	4-10	5.0-10.0	5.6-7.3	---	1.60-1.70	6.00-20.00	0.02-0.04	Low------	0.0-0.5	0.15	0.15			

Table 19.--Physical and Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Cation-exchange capacity	Soil reaction	Calcium carbonate	Moist bulk density	Permea-bility	Available water capacity	Shrink-swell potential	Organic matter	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	meq/100g	pH	Pct	g/cc	In/hr	In/in		Pct					
87B2:															
Dickinson-------	0-8	10-18	15.0-20.0	5.6-7.3	---	1.50-1.55	2.00-6.00	0.12-0.15	Low------	1.0-2.0	0.20	0.20	4	3	86
	8-30	10-15	15.0-20.0	5.1-6.5	---	1.45-1.55	2.00-6.00	0.12-0.15	Low------	0.5-1.0	0.20	0.20			
	30-46	4-10	5.0-10.0	5.1-6.5	---	1.55-1.65	6.00-20.00	0.08-0.10	Low------	0.0-0.5	0.17	0.17			
	46-60	4-10	5.0-10.0	5.6-7.3	---	1.60-1.70	6.00-20.00	0.02-0.04	Low------	0.0-0.5	0.15	0.15			
100A:															
Palms-----------	0-6	---	150-200	5.1-7.8	---	0.30-0.40	0.20-6.00	0.35-0.45	---	75-99	---	---	2	2	134
	6-32	---	150-200	5.1-7.8	---	0.15-0.30	0.20-6.00	0.35-0.45	---	75-99	---	---			
	32-60	7-35	2.0-14.0	6.1-8.4	0-20	1.45-1.75	0.20-2.00	0.14-0.22	Low------	---	0.37	0.37			
103A:															
Houghton--------	0-7	---	140-200	4.5-7.8	---	0.20-0.35	0.20-6.00	0.35-0.45	---	70-99	---	---	3	2	134
	7-60	---	100-200	4.5-7.8	---	0.15-0.25	0.20-6.00	0.35-0.45	---	70-99	---	---			
104A:															
Virgil----------	0-7	15-27	13.0-24.0	6.1-7.8	---	1.15-1.35	0.60-2.00	0.22-0.24	Low------	2.0-4.0	0.32	0.32	5	6	48
	7-13	15-27	9.0-17.0	5.1-7.3	---	1.15-1.35	0.60-2.00	0.22-0.24	Low------	0.2-0.5	0.43	0.43			
	13-49	27-35	16.0-23.0	5.1-7.8	---	1.35-1.55	0.60-2.00	0.18-0.20	Moderate	0.2-1.0	0.37	0.37			
	49-60	15-30	9.0-20.0	5.6-8.4	0-20	1.45-1.75	0.60-6.00	0.05-0.11	Low------	0.2-0.5	0.28	0.32			
134A:															
Camden----------	0-14	14-27	10.0-20.0	5.1-7.3	---	1.35-1.55	0.60-2.00	0.21-0.25	Low------	1.0-2.0	0.37	0.37	5	6	48
	14-29	22-35	13.0-22.0	5.1-7.3	---	1.40-1.60	0.60-2.00	0.14-0.24	Moderate	0.1-0.5	0.37	0.37			
	29-60	18-30	10.0-19.0	5.1-7.3	---	1.45-1.65	0.60-2.00	0.11-0.22	Low------	0.0-0.5	0.32	---			
	60-80	5-20	3.0-12.0	5.1-8.4	0-5	1.40-1.70	0.60-6.00	0.12-0.22	Low------	0.0-0.5	0.32	---			
134B:															
Camden----------	0-14	14-27	10.0-20.0	5.1-7.3	---	1.35-1.55	0.60-2.00	0.21-0.25	Low------	1.0-2.0	0.37	0.37	5	6	48
	14-29	22-35	13.0-22.0	5.1-7.3	---	1.40-1.60	0.60-2.00	0.14-0.24	Moderate	0.1-0.5	0.37	0.37			
	29-60	18-30	10.0-19.0	5.1-7.3	---	1.45-1.65	0.60-2.00	0.11-0.22	Low------	0.0-0.5	0.32	---			
	60-80	5-20	3.0-12.0	5.1-8.4	0-5	1.40-1.70	0.60-6.00	0.12-0.22	Low------	0.0-0.5	0.32	---			
146A:															
Elliott---------	0-16	24-27	20.0-24.0	5.6-7.3	---	1.10-1.30	0.60-2.00	0.22-0.24	Low------	4.0-5.0	0.28	0.28	5	6	48
	16-33	35-50	17.0-27.0	5.6-7.8	0-5	1.30-1.60	0.20-0.60	0.11-0.20	Moderate	0.0-1.0	0.28	0.28			
	33-60	27-40	14.0-20.0	7.4-8.4	10-40	1.70-1.90	0.06-0.20	0.07-0.10	Moderate	0.0-0.5	0.43	0.43			
146B:															
Elliott---------	0-16	24-27	20.0-24.0	5.6-7.3	---	1.10-1.30	0.60-2.00	0.22-0.24	Low------	4.0-5.0	0.28	0.28	5	6	48
	16-33	35-50	17.0-27.0	5.6-7.8	0-5	1.30-1.60	0.20-0.60	0.11-0.20	Moderate	0.0-1.0	0.28	0.28			
	33-60	27-40	14.0-20.0	7.4-8.4	10-40	1.70-1.90	0.06-0.20	0.07-0.10	Moderate	0.0-0.5	0.43	0.43			

Table 19.--Physical and Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Cation-exchange capacity	Soil reaction	Calcium carbonate	Moist bulk density	Permea-bility	Available water capacity	Shrink-swell potential	Organic matter	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	meq/100g	pH	Pct	g/cc	In/hr	In/in		Pct					
148A:															
Proctor---------	0-11	18-27	15.0-24.0	5.1-7.8	---	1.10-1.30	0.60-2.00	0.22-0.24	Low------	2.0-4.0	0.32	0.32	5	6	48
	11-27	25-35	16.0-25.0	5.6-7.3	---	1.20-1.45	0.60-2.00	0.18-0.20	Moderate	0.5-2.0	0.43	0.43			
	27-38	22-35	15.0-23.0	5.6-7.3	---	1.30-1.55	0.60-6.00	0.13-0.16	Moderate	0.2-1.0	0.32	0.32			
	38-73	10-20	4.0-12.0	6.1-7.8	0-10	1.40-1.70	0.60-6.00	0.07-0.19	Low------	0.2-0.5	0.17	0.28			
148B:															
Proctor---------	0-11	18-27	15.0-24.0	5.1-7.8	---	1.10-1.30	0.60-2.00	0.22-0.24	Low------	2.0-4.0	0.32	0.32	5	6	48
	11-27	25-35	16.0-25.0	5.6-7.3	---	1.20-1.45	0.60-2.00	0.18-0.20	Moderate	0.5-2.0	0.43	0.43			
	27-38	22-35	15.0-23.0	5.6-7.3	---	1.30-1.55	0.60-6.00	0.13-0.16	Moderate	0.2-1.0	0.32	0.32			
	38-73	10-20	4.0-12.0	6.1-7.8	0-10	1.40-1.70	0.60-6.00	0.07-0.19	Low------	0.2-0.5	0.17	0.28			
149A:															
Brenton---------	0-13	20-27	18.0-26.0	5.6-7.3	---	1.25-1.45	0.60-2.00	0.22-0.26	Low------	3.0-5.0	0.28	0.28	5	6	48
	13-35	25-35	15.0-23.0	5.6-7.3	---	1.30-1.55	0.60-2.00	0.18-0.20	Moderate	0.0-1.0	0.28	0.28			
	35-43	20-30	12.0-19.0	5.6-7.8	0-5	1.40-1.60	0.60-2.00	0.15-0.19	Moderate	0.0-0.5	0.28	0.28			
	43-60	5-20	9.0-19.0	5.6-8.4	0-20	1.50-1.70	0.60-2.00	0.08-0.15	Low------	0.0-0.5	0.28	0.32			
152A:															
Drummer---------	0-19	27-35	26.0-53.0	5.6-7.3	---	1.10-1.30	0.60-2.00	0.21-0.23	Moderate	5.0-7.0	0.28	0.28	5	7	38
	19-43	20-35	12.0-23.0	5.6-7.8	---	1.20-1.45	0.60-2.00	0.21-0.24	Moderate	0.0-1.0	0.28	0.28			
	43-48	15-33	13.0-21.0	6.1-8.4	0-20	1.30-1.55	0.60-2.00	0.17-0.20	Moderate	0.0-0.5	0.28	0.32			
	48-60	10-32	9.0-19.0	6.6-8.4	0-40	1.40-1.70	0.60-2.00	0.11-0.19	Low------	0.0-0.5	0.28	0.32			
153A:															
Pella-----------	0-14	27-35	25.0-30.0	6.1-7.8	---	1.10-1.30	0.60-2.00	0.21-0.23	Moderate	5.0-6.0	0.28	0.28	5	7	38
	14-39	27-35	15.0-20.0	6.6-7.8	0-10	1.20-1.45	0.60-2.00	0.21-0.24	Moderate	0.5-1.0	0.28	0.28			
	39-50	15-30	10.0-20.0	7.4-8.4	5-30	1.35-1.60	0.60-2.00	0.15-0.20	Moderate	0.2-0.5	0.28	0.37			
	50-60	15-30	10.0-20.0	7.4-8.4	5-40	1.40-1.70	0.60-2.00	0.10-0.22	Low------	0.0-0.2	0.28	0.37			
153A+:															
Pella-----------	0-30	18-27	20.0-30.0	6.1-7.8	---	1.15-1.35	0.60-2.00	0.22-0.24	Moderate	5.0-6.0	0.28	0.28	5	6	48
	30-53	27-35	15.0-20.0	6.6-7.8	0-10	1.20-1.45	0.60-2.00	0.21-0.24	Moderate	0.5-1.0	0.28	0.28			
	53-62	15-30	10.0-20.0	7.4-8.4	5-30	1.35-1.60	0.60-2.00	0.15-0.20	Moderate	0.2-0.5	0.28	0.37			
	62-80	15-30	10.0-20.0	7.4-8.4	5-40	1.40-1.70	0.60-2.00	0.10-0.22	Low------	0.0-0.2	0.28	0.37			
172A:															
Hoopeston-------	0-14	8-18	9.0-17.0	5.1-7.3	---	1.35-1.70	2.00-6.00	0.12-0.15	Low------	2.0-3.0	0.20	0.20	4	3	86
	14-38	10-18	7.0-13.0	5.1-7.8	0-5	1.45-1.70	2.00-6.00	0.12-0.17	Low------	0.2-1.0	0.28	0.28			
	38-60	2-12	1.0-7.0	4.5-8.4	0-20	1.50-1.70	6.00-20.00	0.05-0.10	Low------	0.1-0.5	0.17	0.17			
189A:															
Martinton-------	0-11	20-27	18.0-24.0	5.6-7.3	---	1.20-1.40	0.60-2.00	0.22-0.24	Low------	4.0-5.0	0.28	0.28	5	6	48
	11-30	35-45	18.0-24.0	5.6-7.8	0-10	1.25-1.45	0.20-0.60	0.11-0.20	Moderate	0.5-1.0	0.37	0.37			
	30-60	15-42	7.0-22.0	6.1-8.4	5-30	1.40-1.60	0.20-0.60	0.11-0.22	Moderate	0.0-0.5	0.37	0.37			

Table 19.--Physical and Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Cation-exchange capacity	Soil reaction	Calcium carbonate	Moist bulk density	Permea-bility	Available water capacity	Shrink-swell potential	Organic matter	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	meq/100g	pH	Pct	g/cc	In/hr	In/in		Pct					
197A:															
Troxel----------	0-8	20-27	18.0-26.0	5.6-7.3	---	1.15-1.35	0.60-2.00	0.22-0.24	Low------	3.0-5.0	0.28	0.28	5	6	48
	8-39	20-27	13.0-18.0	5.6-7.3	---	1.20-1.40	0.60-2.00	0.20-0.22	Low------	3.0-5.0	0.28	0.28			
	39-55	20-35	12.0-22.0	5.6-7.3	---	1.30-1.50	0.60-2.00	0.15-0.20	Moderate	0.0-0.5	0.28	0.28			
	55-80	20-35	12.0-22.0	5.6-7.8	0-10	1.35-1.65	0.60-2.00	0.09-0.19	Low------	0.0-0.5	0.28	0.37			
198A:															
Elburn----------	0-12	22-27	20.0-30.0	5.6-7.3	---	1.10-1.30	0.60-2.00	0.22-0.24	Low------	4.0-5.0	0.28	0.28	5	6	48
	12-42	25-35	15.0-25.0	5.6-7.3	---	1.20-1.40	0.60-2.00	0.18-0.20	Moderate	0.5-2.0	0.43	0.43			
	42-48	15-30	9.0-15.0	6.1-8.4	0-20	1.50-1.70	0.60-6.00	0.12-0.18	Low------	0.0-0.2	0.43	0.43			
	48-60	2-15	0.0-10.0	6.1-8.4	0-20	1.50-1.75	2.00-6.00	0.06-0.10	Low------	0.0-0.2	0.05	0.05			
206A:															
Thorp-----------	0-11	20-27	20.0-28.0	5.1-7.8	---	1.15-1.35	0.20-0.60	0.22-0.24	Low------	4.0-6.0	0.37	0.37	5	6	48
	11-22	18-25	11.0-17.0	5.1-7.3	---	1.30-1.50	0.20-0.60	0.20-0.22	Low------	0.5-1.0	0.37	0.37			
	22-38	22-35	13.0-22.0	5.1-7.3	---	1.35-1.55	0.06-0.20	0.18-0.20	Moderate	0.0-0.5	0.37	0.37			
	38-60	18-30	12.0-19.0	5.6-7.8	0-5	1.40-1.60	0.06-0.20	0.15-0.22	Moderate	0.0-0.5	0.37	0.37			
210A:															
Lena------------	0-11	---	---	7.4-8.4	---	0.15-0.45	2.00-6.00	0.35-0.45	---	60-99	---	---	3	2	134
	11-60	---	---	7.4-8.4	---	0.15-0.45	2.00-6.00	0.35-0.45	---	---	---	---			
219A:															
Millbrook-------	0-8	18-27	15.0-24.0	5.1-7.8	---	1.40-1.60	0.60-2.00	0.22-0.24	Low------	2.0-4.0	0.32	0.32	5	6	48
	8-12	15-27	10.0-18.0	5.1-7.3	---	1.40-1.60	0.60-2.00	0.22-0.24	Low------	0.5-1.0	0.32	0.32			
	12-26	25-35	16.0-23.0	5.1-7.3	---	1.45-1.65	0.60-2.00	0.18-0.20	Moderate	0.0-1.0	0.43	0.43			
	26-41	18-35	11.0-22.0	5.1-7.3	---	1.45-1.70	0.60-2.00	0.12-0.19	Moderate	0.0-0.5	0.32	0.32			
	41-65	10-25	6.0-15.0	5.6-8.4	0-20	1.50-1.75	0.60-2.00	0.11-0.19	Low------	0.0-0.5	0.24	0.24			
221B:															
Parr------------	0-11	12-22	8.0-22.0	5.6-7.3	---	1.30-1.45	0.60-2.00	0.20-0.24	Low------	2.0-4.0	0.32	0.32	4	5	56
	11-32	22-32	8.0-21.0	5.6-7.3	---	1.40-1.55	0.60-2.00	0.15-0.19	Moderate	0.0-0.5	0.32	0.32			
	32-36	20-25	8.0-16.0	6.6-8.4	0-20	1.55-1.65	0.60-2.00	0.15-0.17	Moderate	0.0-0.5	0.32	0.32			
	36-60	10-20	4.0-13.0	7.4-8.4	5-35	1.70-1.90	0.20-0.60	0.05-0.10	Low------	0.0-0.2	0.32	0.37			
221C2:															
Parr------------	0-9	12-22	8.0-22.0	5.6-7.3	---	1.30-1.45	0.60-2.00	0.20-0.24	Low------	2.0-4.0	0.32	0.32	4	5	56
	9-29	22-32	8.0-21.0	5.6-7.3	---	1.40-1.55	0.60-2.00	0.15-0.19	Moderate	0.0-0.5	0.32	0.32			
	29-33	20-25	8.0-16.0	6.6-8.4	0-20	1.55-1.65	0.60-2.00	0.15-0.17	Moderate	0.0-0.5	0.32	0.32			
	33-60	10-20	4.0-13.0	7.4-8.4	5-35	1.70-1.90	0.20-0.60	0.05-0.10	Low------	0.0-0.2	0.32	0.37			
223B:															
Varna-----------	0-11	20-27	18.0-24.0	5.6-7.8	---	1.10-1.30	0.60-2.00	0.22-0.24	Low------	3.0-4.0	0.28	0.28	5	6	48
	11-32	35-50	22.0-30.0	5.6-7.8	0-15	1.30-1.60	0.20-0.60	0.09-0.19	Moderate	0.5-1.0	0.32	0.32			
	32-60	27-40	16.0-25.0	6.6-8.4	5-30	1.65-1.90	0.06-0.20	0.01-0.09	Low------	0.2-0.5	0.37	0.43			

Table 19.--Physical and Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Cation-exchange capacity	Soil reaction	Calcium carbonate	Moist bulk density	Permea-bility	Available water capacity	Shrink-swell potential	Organic matter	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	meq/100g	pH	Pct	g/cc	In/hr	In/in		Pct					
223C2:															
Varna-----------	0-8	20-27	18.0-24.0	5.6-7.8	---	1.10-1.30	0.60-2.00	0.22-0.24	Low------	3.0-4.0	0.28	0.28	5	6	48
	8-25	35-50	22.0-30.0	5.6-7.8	0-15	1.30-1.60	0.20-0.60	0.09-0.19	Moderate	0.5-1.0	0.32	0.32			
	25-60	27-40	16.0-25.0	6.6-8.4	5-30	1.65-1.90	0.06-0.20	0.01-0.09	Low------	0.2-0.5	0.37	0.43			
223D2:															
Varna-----------	0-8	20-27	18.0-24.0	5.6-7.8	---	1.10-1.30	0.60-2.00	0.22-0.24	Low------	3.0-4.0	0.28	0.28	5	6	48
	8-25	35-50	22.0-30.0	5.6-7.8	0-15	1.30-1.60	0.20-0.60	0.09-0.19	Moderate	0.5-1.0	0.32	0.32			
	25-60	27-40	16.0-25.0	6.6-8.4	5-30	1.65-1.90	0.06-0.20	0.01-0.09	Low------	0.2-0.5	0.37	0.43			
228B:															
Nappanee--------	0-8	20-27	10.0-15.0	5.1-7.3	---	1.30-1.50	0.60-2.00	0.20-0.24	Low------	1.0-3.0	0.37	0.37	3	6	48
	8-34	45-60	8.0-17.0	5.1-7.8	---	1.40-1.65	0.06-0.20	0.08-0.14	Moderate	---	0.37	0.37			
	34-60	35-50	5.0-12.0	7.4-8.4	10-20	1.50-1.75	0.06-0.20	0.06-0.12	Moderate	---	0.37	0.37			
232A:															
Ashkum----------	0-13	35-40	27.0-38.0	5.6-7.8	---	1.15-1.35	0.20-0.60	0.15-0.20	High-----	3.0-7.0	0.24	0.24	5	4	86
	13-30	35-45	21.0-30.0	6.1-7.8	0-5	1.30-1.60	0.20-0.60	0.11-0.20	High-----	0.0-2.0	0.32	0.32			
	30-60	30-40	18.0-25.0	6.1-8.4	0-25	1.45-1.75	0.20-0.60	0.09-0.18	Moderate	0.0-0.5	0.32	0.37			
290A:															
Warsaw----------	0-15	15-25	10.0-25.0	5.6-7.3	---	1.30-1.50	0.60-2.00	0.20-0.24	Low------	2.0-5.0	0.28	0.28	4	5	56
	15-31	17-30	7.0-22.0	5.1-6.5	---	1.35-1.60	0.60-2.00	0.16-0.19	Low------	0.5-2.0	0.28	0.32			
	31-60	2-8	1.0-7.0	7.9-8.4	15-25	1.40-1.65	>20.00	0.02-0.04	Low------	0.0-1.0	0.10	0.37			
290B:															
Warsaw----------	0-15	15-25	10.0-25.0	5.6-7.3	---	1.30-1.50	0.60-2.00	0.20-0.24	Low------	2.0-5.0	0.28	0.28	4	5	56
	15-31	17-30	7.0-22.0	5.1-6.5	---	1.35-1.60	0.60-2.00	0.16-0.19	Low------	0.5-2.0	0.28	0.32			
	31-60	2-8	1.0-7.0	7.9-8.4	15-25	1.40-1.65	>20.00	0.02-0.04	Low------	0.0-1.0	0.10	0.37			
290C2:															
Warsaw----------	0-9	15-25	10.0-25.0	5.6-7.3	---	1.30-1.50	0.60-2.00	0.20-0.24	Low------	2.0-5.0	0.28	0.28	4	5	56
	9-31	17-30	7.0-22.0	5.1-6.5	---	1.35-1.60	0.60-2.00	0.16-0.19	Low------	0.5-2.0	0.28	0.32			
	31-60	2-8	1.0-7.0	7.9-8.4	15-25	1.40-1.65	>20.00	0.02-0.04	Low------	0.0-1.0	0.10	0.37			
297A:															
Ringwood--------	0-12	18-27	17.0-26.0	5.6-7.3	---	1.10-1.30	0.60-2.00	0.22-0.24	Low------	3.0-5.0	0.28	0.28	5	5	56
	12-20	22-35	14.0-23.0	5.6-7.3	---	1.20-1.40	0.60-2.00	0.18-0.20	Moderate	0.5-1.0	0.43	0.43			
	20-36	18-30	12.0-20.0	5.6-8.4	0-20	1.35-1.55	0.60-2.00	0.15-0.19	Moderate	0.5-1.0	0.32	0.32			
	36-60	5-18	6.0-13.0	7.4-8.4	15-30	1.50-1.75	2.00-6.00	0.10-0.13	Low------	0.0-0.5	0.17	0.24			
297B:															
Ringwood--------	0-12	18-27	17.0-26.0	5.6-7.3	---	1.10-1.30	0.60-2.00	0.22-0.24	Low------	3.0-5.0	0.28	0.28	5	5	56
	12-20	22-35	14.0-23.0	5.6-7.3	---	1.20-1.40	0.60-2.00	0.18-0.20	Moderate	0.5-1.0	0.43	0.43			
	20-36	18-30	12.0-20.0	5.6-8.4	0-20	1.35-1.55	0.60-2.00	0.15-0.19	Moderate	0.5-1.0	0.32	0.32			
	36-60	5-18	6.0-13.0	7.4-8.4	15-30	1.50-1.75	2.00-6.00	0.10-0.13	Low------	0.0-0.5	0.17	0.24			

Table 19.--Physical and Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Cation-exchange capacity	Soil reaction	Calcium carbonate	Moist bulk density	Permea-bility	Available water capacity	Shrink-swell potential	Organic matter	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	meq/100g	pH	Pct	g/cc	In/hr	In/in		Pct					
298B:															
Beecher---------	0-9	20-27	16.0-24.0	4.5-7.3	---	1.35-1.55	0.20-0.60	0.21-0.24	Low------	2.0-4.0	0.37	0.37	5	6	48
	9-32	35-50	21.0-32.0	4.5-7.8	---	1.40-1.65	0.06-0.20	0.11-0.19	Moderate	0.0-1.0	0.37	0.37			
	32-60	25-45	15.0-28.0	7.4-8.4	5-30	1.65-1.90	0.06-0.20	0.11-0.18	Moderate	0.0-0.5	0.37	0.37			
310B:															
McHenry---------	0-14	10-20	8.0-18.0	5.6-7.3	---	1.10-1.30	0.60-2.00	0.22-0.24	Low------	1.0-3.0	0.37	0.37	5	5	56
	14-22	22-35	13.0-23.0	5.1-7.3	---	1.20-1.40	0.60-2.00	0.15-0.22	Moderate	0.5-1.0	0.37	0.37			
	22-37	18-30	12.0-20.0	5.1-7.8	0-10	1.35-1.55	0.60-2.00	0.12-0.19	Moderate	0.5-1.0	0.24	---			
	37-60	5-15	3.0-10.0	7.4-8.4	10-30	1.50-1.75	2.00-6.00	0.08-0.16	Low------	0.0-0.5	0.17	---			
318A:															
Lorenzo---------	0-8	18-27	11.0-19.0	5.6-7.3	---	1.25-1.40	0.60-2.00	0.20-0.22	Low------	2.0-4.0	0.28	0.28	3	6	48
	8-18	20-35	10.0-22.0	5.6-7.8	15-40	1.60-1.70	2.00-6.00	0.15-0.19	Moderate	0.0-1.0	0.28	0.32			
	18-60	1-5	1.0-3.0	7.4-8.4	15-40	1.75-1.95	>20.00	0.02-0.04	Low------	0.0-0.5	0.10	0.10			
318B:															
Lorenzo---------	0-8	18-27	11.0-19.0	5.6-7.3	---	1.25-1.40	0.60-2.00	0.20-0.22	Low------	2.0-4.0	0.28	0.28	3	6	48
	8-18	20-35	10.0-22.0	5.6-7.8	15-40	1.60-1.70	2.00-6.00	0.15-0.19	Moderate	0.0-1.0	0.28	0.32			
	18-60	1-5	1.0-3.0	7.4-8.4	15-40	1.75-1.95	>20.00	0.02-0.04	Low------	0.0-0.5	0.10	0.10			
318C2:															
Lorenzo---------	0-8	18-27	11.0-19.0	5.6-7.3	---	1.25-1.40	0.60-2.00	0.20-0.22	Low------	2.0-4.0	0.28	0.28	3	6	48
	8-18	20-35	10.0-22.0	5.6-7.8	15-40	1.60-1.70	2.00-6.00	0.15-0.19	Moderate	0.0-1.0	0.28	0.32			
	18-60	1-5	1.0-3.0	7.4-8.4	15-40	1.75-1.95	>20.00	0.02-0.04	Low------	0.0-0.5	0.10	0.10			
318D2:															
Lorenzo---------	0-8	18-27	11.0-19.0	5.6-7.3	---	1.25-1.40	0.60-2.00	0.20-0.22	Low------	2.0-4.0	0.28	0.28	3	6	48
	8-18	20-35	10.0-22.0	5.6-7.8	15-40	1.60-1.70	2.00-6.00	0.15-0.19	Moderate	0.0-1.0	0.28	0.32			
	18-60	1-5	1.0-3.0	7.4-8.4	15-40	1.75-1.95	>20.00	0.02-0.04	Low------	0.0-0.5	0.10	0.10			
323B:															
Casco-----------	0-8	10-20	4.0-20.0	5.6-7.3	---	1.35-1.55	0.60-2.00	0.19-0.24	Low------	1.0-3.0	0.32	0.32	3	5	56
	8-17	18-35	4.0-30.0	5.6-7.8	0-3	1.55-1.65	0.60-2.00	0.09-0.19	Moderate	0.0-0.5	0.32	0.32			
	17-60	0-2	0.0-3.0	7.4-8.4	1-25	1.30-1.70	>20.00	0.02-0.04	Low------	0.0-0.5	0.10	0.10			
323C2:															
Casco-----------	0-8	10-20	4.0-20.0	5.6-7.3	---	1.35-1.55	0.60-2.00	0.19-0.24	Low------	1.0-3.0	0.32	0.32	3	5	56
	8-17	18-35	4.0-30.0	5.6-7.8	0-3	1.55-1.65	0.60-2.00	0.09-0.19	Moderate	0.0-0.5	0.32	0.32			
	17-60	0-2	0.0-3.0	7.4-8.4	1-25	1.30-1.70	>20.00	0.02-0.04	Low------	0.0-0.5	0.10	0.10			
323C3:															
Casco-----------	0-7	27-30	6.0-25.0	5.6-7.3	---	1.40-1.50	0.60-2.00	0.18-0.22	Low------	0.5-1.0	0.32	0.32	2	6	48
	7-19	18-35	4.0-30.0	5.6-7.8	0-3	1.55-1.65	0.60-2.00	0.09-0.19	Moderate	0.0-0.5	0.32	0.32			
	19-60	0-2	0.0-3.0	7.4-8.4	1-25	1.30-1.80	>20.00	0.02-0.04	Low------	0.0-0.5	0.10	0.10			

Table 19.--Physical and Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Cation-exchange capacity	Soil reaction	Calcium carbonate	Moist bulk density	Permea-bility	Available water capacity	Shrink-swell potential	Organic matter	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	meq/100g	pH	Pct	g/cc	In/hr	In/in		Pct					
323D2:															
Casco-----------	0-8	10-20	4.0-20.0	5.6-7.3	---	1.35-1.55	0.60-2.00	0.19-0.24	Low------	1.0-3.0	0.32	0.32	3	5	56
	8-17	18-35	4.0-30.0	5.6-7.8	0-3	1.55-1.65	0.60-2.00	0.09-0.19	Moderate	0.0-0.5	0.32	0.32			
	17-60	0-2	0.0-3.0	7.4-8.4	1-25	1.30-1.70	>20.00	0.02-0.04	Low------	0.0-0.5	0.10	0.10			
323D3:															
Casco-----------	0-7	27-30	6.0-25.0	5.6-7.3	---	1.40-1.50	0.60-2.00	0.18-0.22	Low------	0.5-1.0	0.32	0.32	2	6	48
	7-19	18-35	4.0-30.0	5.6-7.8	0-3	1.55-1.65	0.60-2.00	0.09-0.19	Moderate	0.0-0.5	0.32	0.32			
	19-60	0-2	0.0-3.0	7.4-8.4	1-25	1.30-1.80	>20.00	0.02-0.04	Low------	0.0-0.5	0.10	0.10			
325A:															
Dresden---------	0-7	18-27	15.0-24.0	5.6-7.3	---	1.25-1.40	0.60-2.00	0.20-0.24	Low------	2.0-4.0	0.28	0.28	4	6	48
	7-27	27-35	16.0-23.0	5.6-7.3	---	1.35-1.55	0.60-2.00	0.15-0.20	Moderate	0.0-1.0	0.28	0.28			
	27-32	20-30	12.0-19.0	5.6-7.3	0-15	1.45-1.70	0.60-2.00	0.08-0.18	Moderate	0.0-0.5	0.24	---			
	32-60	1-5	0.0-3.0	7.4-8.4	15-40	1.60-1.70	>20.00	0.02-0.04	Low------	0.0-0.5	0.10	---			
325B:															
Dresden---------	0-7	18-27	15.0-24.0	5.6-7.3	---	1.25-1.40	0.60-2.00	0.20-0.24	Low------	2.0-4.0	0.28	0.28	4	6	48
	7-27	27-35	16.0-23.0	5.6-7.3	---	1.35-1.55	0.60-2.00	0.15-0.20	Moderate	0.0-1.0	0.28	0.28			
	27-32	20-30	12.0-19.0	5.6-7.3	0-15	1.45-1.70	0.60-2.00	0.08-0.18	Moderate	0.0-0.5	0.24	---			
	32-60	1-5	0.0-3.0	7.4-8.4	15-40	1.60-1.70	>20.00	0.02-0.04	Low------	0.0-0.5	0.10	---			
327A:															
Fox-------------	0-10	10-17	4.0-20.0	5.1-7.3	---	1.35-1.55	0.60-2.00	0.17-0.24	Low------	1.0-3.0	0.37	0.37	4	5	56
	10-21	18-35	4.0-30.0	5.1-6.5	---	1.55-1.65	0.60-2.00	0.10-0.22	Moderate	0.0-0.5	0.43	0.43			
	21-33	18-35	4.0-30.0	5.6-7.8	0-45	1.55-1.65	0.60-2.00	0.10-0.19	Moderate	0.0-0.5	0.32	0.32			
	33-60	0-2	0.0-3.0	7.4-8.4	5-45	1.30-1.70	>20.00	0.02-0.07	Low------	0.0-0.5	0.10	---			
327B:															
Fox-------------	0-10	10-17	4.0-20.0	5.1-7.3	---	1.35-1.55	0.60-2.00	0.17-0.24	Low------	1.0-3.0	0.37	0.37	4	5	56
	10-21	18-35	4.0-30.0	5.1-6.5	---	1.55-1.65	0.60-2.00	0.10-0.22	Moderate	0.0-0.5	0.43	0.43			
	21-33	18-35	4.0-30.0	5.6-7.8	0-45	1.55-1.65	0.60-2.00	0.10-0.19	Moderate	0.0-0.5	0.32	0.32			
	33-60	0-2	0.0-3.0	7.4-8.4	5-45	1.30-1.70	>20.00	0.02-0.07	Low------	0.0-0.5	0.10	---			
327C2:															
Fox-------------	0-10	10-17	4.0-20.0	5.1-7.3	---	1.35-1.55	0.60-2.00	0.17-0.24	Low------	1.0-3.0	0.37	0.37	4	5	56
	10-21	18-35	4.0-30.0	5.1-6.5	---	1.55-1.65	0.60-2.00	0.10-0.22	Moderate	0.0-0.5	0.43	0.43			
	21-33	18-35	4.0-30.0	5.6-7.8	0-45	1.55-1.65	0.60-2.00	0.10-0.19	Moderate	0.0-0.5	0.32	0.32			
	33-60	0-2	0.0-3.0	7.4-8.4	5-45	1.30-1.70	>20.00	0.02-0.07	Low------	0.0-0.5	0.10	---			
327D2:															
Fox-------------	0-10	10-17	4.0-20.0	5.1-7.3	---	1.35-1.55	0.60-2.00	0.17-0.24	Low------	1.0-3.0	0.37	0.37	4	5	56
	10-21	18-35	4.0-30.0	5.1-6.5	---	1.55-1.65	0.60-2.00	0.10-0.22	Moderate	0.0-0.5	0.43	0.43			
	21-33	18-35	4.0-30.0	5.6-7.8	0-45	1.55-1.65	0.60-2.00	0.10-0.19	Moderate	0.0-0.5	0.32	0.32			
	33-60	0-2	0.0-3.0	7.4-8.4	5-45	1.30-1.70	>20.00	0.02-0.07	Low------	0.0-0.5	0.10	---			

Table 19.--Physical and Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Cation-exchange capacity	Soil reaction	Calcium carbonate	Moist bulk density	Permea-bility	Available water capacity	Shrink-swell potential	Organic matter	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	meq/100g	pH	Pct	g/cc	In/hr	In/in		Pct					
329A:															
Will------------	0-14	20-27	22.0-28.0	5.6-7.3	---	1.25-1.40	0.60-2.00	0.15-0.20	Moderate	5.0-6.0	0.28	0.28	4	6	48
	14-28	23-33	14.0-23.0	6.1-8.4	0-20	1.35-1.55	0.60-2.00	0.15-0.20	Moderate	0.5-2.0	0.28	0.32			
	28-60	0-10	1.0-7.0	7.4-8.4	20-30	1.65-1.85	>20.00	0.02-0.04	Low------	0.2-1.0	0.10	0.17			
330A:															
Peotone---------	0-14	33-40	29.0-38.0	5.6-7.8	---	1.20-1.40	0.20-0.60	0.21-0.23	High-----	5.0-7.0	0.28	0.28	5	4	86
	14-45	35-45	22.0-33.0	6.1-7.8	---	1.30-1.60	0.20-0.60	0.11-0.20	High-----	0.5-3.0	0.28	0.28			
	45-60	25-42	15.0-26.0	6.6-8.4	0-15	1.40-1.65	0.20-0.60	0.18-0.20	High-----	0.2-0.5	0.28	0.28			
343A:															
Kane------------	0-12	18-30	17.0-22.0	5.6-7.8	---	1.35-1.55	0.60-2.00	0.20-0.24	Low------	3.0-5.0	0.28	0.28	3	5	56
	12-22	27-35	15.0-23.0	5.6-7.3	---	1.35-1.55	0.60-2.00	0.15-0.20	Moderate	0.5-1.0	0.28	0.28			
	22-29	15-30	12.0-19.0	6.1-7.8	0-15	1.40-1.60	0.60-6.00	0.12-0.18	Low------	0.0-0.5	0.28	0.28			
	29-60	1-10	0.0-6.0	7.9-8.4	15-40	1.65-1.85	>20.00	0.02-0.04	Low------	0.0-0.2	0.10	---			
344A:															
Harvard---------	0-9	20-27	16.0-22.0	5.1-7.8	---	1.15-1.35	0.60-2.00	0.22-0.24	Low------	2.0-3.0	0.32	0.32	5	6	48
	9-30	25-35	15.0-22.0	5.1-7.3	---	1.25-1.55	0.60-2.00	0.15-0.20	Moderate	0.0-0.5	0.43	0.43			
	30-56	15-35	9.0-22.0	5.6-7.8	0-5	1.30-1.60	0.60-2.00	0.12-0.19	Low------	0.0-0.4	0.43	0.43			
	56-69	5-30	3.0-19.0	5.1-8.4	0-20	1.40-1.70	2.00-6.00	0.05-0.15	Low------	0.0-0.4	0.43	0.43			
344B:															
Harvard---------	0-9	20-27	16.0-22.0	5.1-7.8	---	1.15-1.35	0.60-2.00	0.22-0.24	Low------	2.0-3.0	0.32	0.32	5	6	48
	9-30	25-35	15.0-22.0	5.1-7.3	---	1.25-1.55	0.60-2.00	0.15-0.20	Moderate	0.0-0.5	0.43	0.43			
	30-56	15-35	9.0-22.0	5.6-7.8	0-5	1.30-1.60	0.60-2.00	0.12-0.19	Low------	0.0-0.4	0.43	0.43			
	56-69	5-30	3.0-19.0	5.1-8.4	0-20	1.40-1.70	2.00-6.00	0.05-0.15	Low------	0.0-0.4	0.43	0.43			
361B:															
Kidder----------	0-11	10-17	---	6.1-7.8	---	1.35-1.55	0.60-2.00	0.16-0.24	Low------	1.0-3.0	0.37	0.37	5	5	56
	11-28	20-30	---	5.6-7.8	---	1.50-1.65	0.60-2.00	0.11-0.19	Moderate	---	0.32	0.32			
	28-60	6-15	---	7.4-8.4	---	1.40-1.60	2.00-6.00	0.06-0.15	Low------	---	0.24	0.24			
361C:															
Kidder----------	0-11	10-17	---	6.1-7.8	---	1.35-1.55	0.60-2.00	0.16-0.24	Low------	1.0-3.0	0.37	0.37	5	5	56
	11-28	20-30	---	5.6-7.8	---	1.50-1.65	0.60-2.00	0.11-0.19	Moderate	---	0.32	0.32			
	28-60	6-15	---	7.4-8.4	---	1.40-1.60	2.00-6.00	0.06-0.15	Low------	---	0.24	0.24			
361C2:															
Kidder----------	0-11	10-17	---	6.1-7.8	---	1.35-1.55	0.60-2.00	0.16-0.24	Low------	1.0-3.0	0.37	0.37	5	5	56
	11-28	20-30	---	5.6-7.8	---	1.50-1.65	0.60-2.00	0.11-0.19	Moderate	---	0.32	0.32			
	28-60	6-15	---	7.4-8.4	---	1.40-1.60	2.00-6.00	0.06-0.15	Low------	---	0.24	0.24			
361C3:															
Kidder----------	0-7	27-32	---	6.1-7.8	---	1.50-1.65	0.60-2.00	0.13-0.19	Moderate	0.5-1.0	0.32	0.32	5	6	48
	7-23	20-30	---	5.6-7.8	---	1.50-1.65	0.60-2.00	0.11-0.19	Moderate	---	0.32	0.32			
	23-60	6-15	---	7.4-8.4	---	1.40-1.60	2.00-6.00	0.06-0.15	Low------	---	0.24	0.24			

Table 19.--Physical and Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Cation-exchange capacity	Soil reaction	Calcium carbonate	Moist bulk density	Permea-bility	Available water capacity	Shrink-swell potential	Organic matter	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	meq/100g	pH	Pct	g/cc	In/hr	In/in		Pct					
361D2:															
Kidder----------	0-11	10-17	---	6.1-7.8	---	1.35-1.55	0.60-2.00	0.16-0.24	Low------	1.0-3.0	0.37	0.37	5	5	56
	11-28	20-30	---	5.6-7.8	---	1.50-1.65	0.60-2.00	0.11-0.19	Moderate	---	0.32	0.32			
	28-60	6-15	---	7.4-8.4	---	1.40-1.60	2.00-6.00	0.06-0.15	Low------	---	0.24	0.24			
361D3:															
Kidder----------	0-7	27-32	---	6.1-7.8	---	1.50-1.65	0.60-2.00	0.13-0.19	Moderate	0.5-1.0	0.32	0.32	5	6	48
	7-23	20-30	---	5.6-7.8	---	1.50-1.65	0.60-2.00	0.11-0.19	Moderate	---	0.32	0.32			
	23-60	6-15	---	7.4-8.4	---	1.40-1.60	2.00-6.00	0.06-0.15	Low------	---	0.24	0.24			
361E:															
Kidder----------	0-11	10-17	---	6.1-7.8	---	1.35-1.55	0.60-2.00	0.16-0.24	Low------	1.0-3.0	0.37	0.37	5	5	56
	11-28	20-30	---	5.6-7.8	---	1.50-1.65	0.60-2.00	0.11-0.19	Moderate	---	0.32	0.32			
	28-60	6-15	---	7.4-8.4	---	1.40-1.60	2.00-6.00	0.06-0.15	Low------	---	0.24	0.24			
361E2:															
Kidder----------	0-11	10-17	---	6.1-7.8	---	1.35-1.55	0.60-2.00	0.16-0.24	Low------	1.0-3.0	0.37	0.37	5	5	56
	11-28	20-30	---	5.6-7.8	---	1.50-1.65	0.60-2.00	0.11-0.19	Moderate	---	0.32	0.32			
	28-60	6-15	---	7.4-8.4	---	1.40-1.60	2.00-6.00	0.06-0.15	Low------	---	0.24	0.24			
361F:															
Kidder----------	0-11	10-17	---	6.1-7.8	---	1.35-1.55	0.60-2.00	0.16-0.24	Low------	1.0-3.0	0.37	0.37	5	5	56
	11-28	20-30	---	5.6-7.8	---	1.50-1.65	0.60-2.00	0.11-0.19	Moderate	---	0.32	0.32			
	28-60	6-15	---	7.4-8.4	---	1.40-1.60	2.00-6.00	0.06-0.15	Low------	---	0.24	0.24			
363B:															
Griswold--------	0-10	15-25	13.0-23.0	5.6-7.8	---	1.10-1.30	0.60-2.00	0.16-0.22	Low------	2.0-4.0	0.32	0.32	5	5	56
	10-24	20-32	12.0-20.0	5.6-7.8	---	1.20-1.40	0.60-2.00	0.14-0.19	Low------	0.0-1.0	0.32	0.32			
	24-27	18-28	11.0-16.0	5.6-7.8	0-10	1.40-1.60	0.60-2.00	0.12-0.14	Low------	0.0-0.2	0.32	0.32			
	27-60	5-15	9.0-12.0	7.4-8.4	10-40	1.45-1.65	0.60-2.00	0.11-0.13	Low------	0.0-0.1	0.32	0.32			
363C2:															
Griswold--------	0-10	15-25	13.0-23.0	5.6-7.8	---	1.10-1.30	0.60-2.00	0.16-0.22	Low------	2.0-4.0	0.32	0.32	5	5	56
	10-24	20-32	12.0-20.0	5.6-7.8	---	1.20-1.40	0.60-2.00	0.14-0.19	Low------	0.0-1.0	0.32	0.32			
	24-27	18-28	11.0-16.0	5.6-7.8	0-10	1.40-1.60	0.60-2.00	0.12-0.14	Low------	0.0-0.2	0.32	0.32			
	27-60	5-15	9.0-12.0	7.4-8.4	10-40	1.45-1.65	0.60-2.00	0.11-0.13	Low------	0.0-0.1	0.32	0.32			
363D2:															
Griswold--------	0-10	15-25	13.0-23.0	5.6-7.8	---	1.10-1.30	0.60-2.00	0.16-0.22	Low------	2.0-4.0	0.32	0.32	5	5	56
	10-24	20-32	12.0-20.0	5.6-7.8	---	1.20-1.40	0.60-2.00	0.14-0.19	Low------	0.0-1.0	0.32	0.32			
	24-27	18-28	11.0-16.0	5.6-7.8	0-10	1.40-1.60	0.60-2.00	0.12-0.14	Low------	0.0-0.2	0.32	0.32			
	27-60	5-15	9.0-12.0	7.4-8.4	10-40	1.45-1.65	0.60-2.00	0.11-0.13	Low------	0.0-0.1	0.32	0.32			

Table 19.--Physical and Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Cation-exchange capacity	Soil reaction	Calcium carbonate	Moist bulk density	Permea-bility	Available water capacity	Shrink-swell potential	Organic matter	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	meq/100g	pH	Pct	g/cc	In/hr	In/in		Pct					
369A:															
Waupecan--------	0-13	15-27	17.0-26.0	6.1-7.8	---	1.15-1.30	0.60-2.00	0.22-0.24	Low------	4.0-5.0	0.32	0.32	4	6	48
	13-38	25-35	16.0-23.0	5.6-7.3	---	1.30-1.50	0.60-2.00	0.18-0.22	Moderate	0.5-1.0	0.43	0.43			
	38-55	10-25	6.0-16.0	5.6-7.3	---	1.55-1.75	2.00-6.00	0.08-0.18	Low------	0.2-0.5	0.10	0.17			
	55-70	3-10	2.0-8.0	6.6-8.4	0-20	1.60-1.80	>20.00	0.02-0.04	Low------	0.2-0.5	0.10	0.15			
369B:															
Waupecan--------	0-13	15-27	17.0-26.0	6.1-7.8	---	1.15-1.30	0.60-2.00	0.22-0.24	Low------	4.0-5.0	0.32	0.32	4	6	48
	13-38	25-35	16.0-23.0	5.6-7.3	---	1.30-1.50	0.60-2.00	0.18-0.22	Moderate	0.5-1.0	0.43	0.43			
	38-55	10-25	6.0-16.0	5.6-7.3	---	1.55-1.75	2.00-6.00	0.08-0.18	Low------	0.2-0.5	0.10	0.17			
	55-70	3-10	2.0-8.0	6.6-8.4	0-20	1.60-1.80	>20.00	0.02-0.04	Low------	0.2-0.5	0.10	0.15			
379A:															
Dakota----------	0-11	14-27	7.0-30.0	5.1-7.3	---	1.40-1.50	0.60-2.00	0.20-0.22	Low------	2.0-5.0	0.24	0.24	4	5	56
	11-30	18-32	5.0-30.0	5.1-7.3	---	1.30-1.55	0.60-2.00	0.15-0.19	Low------	0.5-2.0	0.32	0.32			
	30-34	4-11	1.0-10.0	5.1-7.3	---	1.55-1.65	2.00-6.00	0.02-0.14	Low------	0.0-0.5	0.24	0.24			
	34-60	1-4	0.0-4.0	5.1-7.8	0-15	1.55-1.65	6.00-20.00	0.02-0.10	Low------	0.0-0.5	0.15	0.15			
379B:															
Dakota----------	0-11	14-27	7.0-30.0	5.1-7.3	---	1.40-1.50	0.60-2.00	0.20-0.22	Low------	2.0-5.0	0.24	0.24	4	5	56
	11-30	18-32	5.0-30.0	5.1-7.3	---	1.30-1.55	0.60-2.00	0.15-0.19	Low------	0.5-2.0	0.32	0.32			
	30-34	4-11	1.0-10.0	5.1-7.3	---	1.55-1.65	2.00-6.00	0.02-0.14	Low------	0.0-0.5	0.24	0.24			
	34-60	1-4	0.0-4.0	5.1-7.8	0-15	1.55-1.65	6.00-20.00	0.02-0.10	Low------	0.0-0.5	0.15	0.15			
488A:															
Hooppole--------	0-17	20-27	15.0-32.0	7.4-8.4	5-15	1.40-1.60	0.60-2.00	0.20-0.24	Moderate	4.0-8.0	0.28	0.28	4	4L	86
	17-44	25-35	12.0-29.0	7.4-8.4	12-18	1.35-1.50	0.60-2.00	0.15-0.19	Moderate	0.5-2.0	0.28	0.28			
	44-60	2-12	1.0-8.0	7.4-8.4	10-15	1.65-1.80	6.00-20.00	0.05-0.10	Low------	0.0-0.5	0.17	0.17			
503B:															
Rockton---------	0-14	18-27	---	5.1-7.3	---	1.30-1.40	0.60-2.00	0.20-0.22	Low------	2.0-6.0	0.28	0.28	4	6	48
	14-35	18-25	---	5.1-7.8	---	1.40-1.60	0.60-2.00	0.16-0.19	Moderate	---	0.28	0.28			
	35-40	---	---	---	---	---	2.00-20.00	---		---	---	---			
512A:															
Danabrook-------	0-13	18-27	18.0-26.0	5.6-7.3	---	1.20-1.40	0.60-2.00	0.22-0.24	Low------	4.0-5.0	0.28	0.28	4	6	48
	13-33	24-35	15.0-25.0	5.1-7.3	---	1.30-1.50	0.60-2.00	0.18-0.20	Moderate	0.5-2.0	0.37	0.37			
	33-50	20-34	12.0-21.0	5.6-7.8	0-20	1.40-1.60	0.60-2.00	0.15-0.19	Moderate	0.2-0.5	0.32	0.32			
	50-60	15-20	9.0-13.0	7.4-8.4	15-40	1.70-1.90	0.20-0.60	0.13-0.19	Low------	0.2-0.5	0.28	0.32			
512B:															
Danabrook-------	0-13	18-27	18.0-26.0	5.6-7.3	---	1.20-1.40	0.60-2.00	0.22-0.24	Low------	4.0-5.0	0.28	0.28	4	6	48
	13-33	24-35	15.0-25.0	5.1-7.3	---	1.30-1.50	0.60-2.00	0.18-0.20	Moderate	0.5-2.0	0.37	0.37			
	33-50	20-34	12.0-21.0	5.6-7.8	0-20	1.40-1.60	0.60-2.00	0.15-0.19	Moderate	0.2-0.5	0.32	0.32			
	50-60	15-20	9.0-13.0	7.4-8.4	15-40	1.70-1.90	0.20-0.60	0.13-0.19	Low------	0.2-0.5	0.28	0.32			

Table 19.--Physical and Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Cation-exchange capacity	Soil reaction	Calcium carbonate	Moist bulk density	Permea-bility	Available water capacity	Shrink-swell potential	Organic matter	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	meq/100g	pH	Pct	g/cc	In/hr	In/in		Pct					
523A:															
Dunham----------	0-12	27-35	25.0-34.0	5.6-7.3	---	1.10-1.30	0.60-2.00	0.21-0.23	Moderate	5.0-6.0	0.24	---	4	7	38
	12-35	23-35	16.0-26.0	5.6-7.3	---	1.30-1.50	0.60-2.00	0.18-0.21	Moderate	0.5-2.0	0.37	---			
	35-44	10-30	6.0-19.0	6.1-7.8	0-20	1.35-1.60	0.60-2.00	0.15-0.20	Moderate	0.0-0.5	0.32	---			
	44-60	1-5	1.0-7.0	7.4-8.4	15-40	1.60-1.85	>20.00	0.02-0.04	Low------	0.0-0.5	0.05	---			
526A:															
Grundelein------	0-11	18-27	19.0-30.0	5.6-7.3	---	1.15-1.30	0.60-2.00	0.22-0.24	Low------	4.0-5.0	0.28	0.28	4	6	48
	11-33	22-35	16.0-26.0	5.6-7.3	---	1.25-1.45	0.60-2.00	0.18-0.20	Moderate	0.5-2.0	0.37	0.37			
	33-39	10-30	6.0-19.0	6.1-7.8	0-20	1.35-1.60	0.60-2.00	0.15-0.20	Moderate	0.0-0.5	0.24	0.32			
	39-60	1-10	1.0-7.0	7.4-8.4	15-40	1.60-1.85	>20.00	0.02-0.04	Low------	0.0-0.5	0.05	0.05			
527B:															
Kidami----------	0-10	10-24	8.0-21.0	5.1-7.3	---	1.30-1.45	0.60-2.00	0.20-0.24	Low------	1.0-3.0	0.32	0.32	4	5	56
	10-37	20-34	11.0-23.0	5.1-7.3	---	1.40-1.60	0.60-2.00	0.15-0.19	Moderate	0.5-1.0	0.28	0.32			
	37-45	17-27	10.0-18.0	6.1-8.4	0-30	1.45-1.65	0.60-2.00	0.17-0.19	Low------	0.0-0.5	0.28	0.32			
	45-60	15-20	9.0-13.0	7.4-8.4	25-40	1.70-1.90	0.20-0.60	0.15-0.19	Low------	0.0-0.5	0.24	0.28			
527C:															
Kidami----------	0-10	10-24	8.0-21.0	5.1-7.3	---	1.30-1.45	0.60-2.00	0.20-0.24	Low------	1.0-3.0	0.32	0.32	4	5	56
	10-37	20-34	11.0-23.0	5.1-7.3	---	1.40-1.60	0.60-2.00	0.15-0.19	Moderate	0.5-1.0	0.28	0.32			
	37-45	17-27	10.0-18.0	6.1-8.4	0-30	1.45-1.65	0.60-2.00	0.17-0.19	Low------	0.0-0.5	0.28	0.32			
	45-60	15-20	9.0-13.0	7.4-8.4	25-40	1.70-1.90	0.20-0.60	0.15-0.19	Low------	0.0-0.5	0.24	0.28			
527C2:															
Kidami----------	0-10	10-24	8.0-21.0	5.1-7.3	---	1.30-1.45	0.60-2.00	0.20-0.24	Low------	1.0-3.0	0.32	0.32	4	5	56
	10-37	20-34	11.0-23.0	5.1-7.3	---	1.40-1.60	0.60-2.00	0.15-0.19	Moderate	0.5-1.0	0.28	0.32			
	37-45	17-27	10.0-18.0	6.1-8.4	0-30	1.45-1.65	0.60-2.00	0.17-0.19	Low------	0.0-0.5	0.28	0.32			
	45-60	15-20	9.0-13.0	7.4-8.4	25-40	1.70-1.90	0.20-0.60	0.15-0.19	Low------	0.0-0.5	0.24	0.28			
527D:															
Kidami----------	0-10	10-24	8.0-21.0	5.1-7.3	---	1.30-1.45	0.60-2.00	0.20-0.24	Low------	1.0-3.0	0.32	0.32	4	5	56
	10-37	20-34	11.0-23.0	5.1-7.3	---	1.40-1.60	0.60-2.00	0.15-0.19	Moderate	0.5-1.0	0.28	0.32			
	37-45	17-27	10.0-18.0	6.1-8.4	0-30	1.45-1.65	0.60-2.00	0.17-0.19	Low------	0.0-0.5	0.28	0.32			
	45-60	15-20	9.0-13.0	7.4-8.4	25-40	1.70-1.90	0.20-0.60	0.15-0.19	Low------	0.0-0.5	0.24	0.28			
527D2:															
Kidami----------	0-10	10-24	8.0-21.0	5.1-7.3	---	1.30-1.45	0.60-2.00	0.20-0.24	Low------	1.0-3.0	0.32	0.32	4	5	56
	10-37	20-34	11.0-23.0	5.1-7.3	---	1.40-1.60	0.60-2.00	0.15-0.19	Moderate	0.5-1.0	0.28	0.32			
	37-45	17-27	10.0-18.0	6.1-8.4	0-30	1.45-1.65	0.60-2.00	0.17-0.19	Low------	0.0-0.5	0.28	0.32			
	45-60	15-20	9.0-13.0	7.4-8.4	25-40	1.70-1.90	0.20-0.60	0.15-0.19	Low------	0.0-0.5	0.24	0.28			
527D3:															
Kidami----------	0-5	27-34	17.0-23.0	5.1-7.3	---	1.35-1.55	0.60-2.00	0.17-0.19	Moderate	0.5-1.0	0.28	0.32	4	6	48
	5-22	20-34	11.0-23.0	5.1-7.3	---	1.40-1.60	0.60-2.00	0.15-0.19	Moderate	0.5-1.0	0.28	0.32			
	22-27	17-27	10.0-18.0	6.1-8.4	0-30	1.45-1.65	0.60-2.00	0.17-0.19	Low------	0.0-0.5	0.28	0.32			
	27-60	15-20	9.0-13.0	7.4-8.4	25-40	1.70-1.90	0.20-0.60	0.15-0.19	Low------	0.0-0.5	0.24	0.28			

Table 19.--Physical and Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Cation-exchange capacity	Soil reaction	Calcium carbonate	Moist bulk density	Permea-bility	Available water capacity	Shrink-swell potential	Organic matter	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	meq/100g	pH	Pct	g/cc	In/hr	In/in		Pct					
528A:															
Lahoguess-------	0-14	12-27	18.0-27.0	5.6-7.3	---	1.35-1.50	0.60-2.00	0.20-0.24	Low------	4.0-5.0	0.24	0.24	4	6	48
	14-38	20-32	13.0-25.0	5.6-7.3	---	1.45-1.65	0.60-2.00	0.15-0.19	Moderate	0.5-2.0	0.32	0.32			
	38-46	10-20	6.0-18.0	6.1-7.8	0-10	1.50-1.70	0.60-6.00	0.08-0.19	Low------	0.0-0.5	0.24	0.28			
	46-60	1-10	1.0-7.0	6.6-8.4	0-20	1.55-1.75	6.00-20.00	0.02-0.10	Low------	0.0-0.5	0.10	0.10			
529A:															
Selmass---------	0-15	18-27	20.0-27.0	5.6-7.3	---	1.35-1.45	0.60-2.00	0.20-0.24	Low------	4.0-5.0	0.24	0.24	4	6	48
	15-42	20-30	13.0-25.0	5.6-7.3	---	1.40-1.55	0.60-2.00	0.15-0.19	Moderate	0.5-2.0	0.32	0.32			
	42-47	10-20	6.0-18.0	6.1-7.8	0-10	1.45-1.65	0.60-6.00	0.08-0.19	Low------	0.0-0.5	0.24	0.28			
	47-60	1-10	1.0-7.0	6.6-8.4	0-20	1.55-1.70	6.00-20.00	0.02-0.10	Low------	0.0-0.5	0.10	0.10			
530B:															
Ozaukee---------	0-7	14-25	5.0-25.0	6.1-7.8	---	1.35-1.55	0.60-2.00	0.21-0.24	Low------	1.0-2.0	0.37	0.37	3	5	56
	7-11	18-35	4.0-30.0	6.1-7.8	---	1.55-1.65	0.60-2.00	0.10-0.22	Moderate	0.0-1.0	0.37	0.37			
	11-31	35-50	7.0-50.0	6.1-8.4	0-40	1.60-1.70	0.06-0.20	0.08-0.20	High-----	0.0-0.5	0.32	0.37			
	31-60	27-35	5.0-30.0	7.9-8.4	40-50	1.60-1.70	0.06-0.20	0.13-0.20	Moderate	0.0-0.5	0.32	0.37			
530C2:															
Ozaukee---------	0-7	14-25	5.0-25.0	6.1-7.8	---	1.35-1.55	0.60-2.00	0.21-0.24	Low------	1.0-2.0	0.37	0.37	3	5	56
	7-11	18-35	4.0-30.0	6.1-7.8	---	1.55-1.65	0.60-2.00	0.10-0.22	Moderate	0.0-1.0	0.37	0.37			
	11-31	35-50	7.0-50.0	6.1-8.4	0-40	1.60-1.70	0.06-0.20	0.08-0.20	High-----	0.0-0.5	0.32	0.37			
	31-60	27-35	5.0-30.0	7.9-8.4	40-50	1.60-1.70	0.06-0.20	0.13-0.20	Moderate	0.0-0.5	0.32	0.37			
530C3:															
Ozaukee---------	0-9	27-40	7.0-35.0	6.1-7.8	---	1.45-1.60	0.20-0.60	0.10-0.21	Moderate	1.0-2.0	0.37	0.37	2	6	48
	9-27	35-50	7.0-50.0	6.1-8.4	0-40	1.60-1.70	0.06-0.20	0.08-0.20	High-----	0.0-0.5	0.32	0.37			
	27-60	27-35	5.0-30.0	7.9-8.4	40-50	1.60-1.70	0.06-0.20	0.13-0.20	Moderate	0.0-0.5	0.32	0.37			
530D2:															
Ozaukee---------	0-7	14-25	5.0-25.0	6.1-7.8	---	1.35-1.55	0.60-2.00	0.21-0.24	Low------	1.0-2.0	0.37	0.37	3	5	56
	7-11	18-35	4.0-30.0	6.1-7.8	---	1.55-1.65	0.60-2.00	0.10-0.22	Moderate	0.0-1.0	0.37	0.37			
	11-31	35-50	7.0-50.0	6.1-8.4	0-40	1.60-1.70	0.06-0.20	0.08-0.20	High-----	0.0-0.5	0.32	0.37			
	31-60	27-35	5.0-30.0	7.9-8.4	40-50	1.60-1.70	0.06-0.20	0.13-0.20	Moderate	0.0-0.5	0.32	0.37			
530D3:															
Ozaukee---------	0-9	27-40	7.0-35.0	6.1-7.8	---	1.45-1.60	0.20-0.60	0.10-0.21	Moderate	1.0-2.0	0.37	0.37	2	6	48
	9-27	35-50	7.0-50.0	6.1-8.4	0-40	1.60-1.70	0.06-0.20	0.08-0.20	High-----	0.0-0.5	0.32	0.37			
	27-60	27-35	5.0-30.0	7.9-8.4	40-50	1.60-1.70	0.06-0.20	0.13-0.20	Moderate	0.0-0.5	0.32	0.37			
530E:															
Ozaukee---------	0-7	14-25	5.0-25.0	6.1-7.8	---	1.35-1.55	0.60-2.00	0.21-0.24	Low------	1.0-2.0	0.37	0.37	3	5	56
	7-11	18-35	4.0-30.0	6.1-7.8	---	1.55-1.65	0.60-2.00	0.10-0.22	Moderate	0.0-1.0	0.37	0.37			
	11-31	35-50	7.0-50.0	6.1-8.4	0-40	1.60-1.70	0.06-0.20	0.08-0.20	High-----	0.0-0.5	0.32	0.37			
	31-60	27-35	5.0-30.0	7.9-8.4	40-50	1.60-1.70	0.06-0.20	0.13-0.20	Moderate	0.0-0.5	0.32	0.37			

Table 19.--Physical and Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Cation-exchange capacity	Soil reaction	Calcium carbonate	Moist bulk density	Permea-bility	Available water capacity	Shrink-swell potential	Organic matter	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	meq/100g	pH	Pct	g/cc	In/hr	In/in		Pct					
543B:															
Piscasaw--------	0-12	18-27	12.0-22.0	5.1-7.3	---	1.35-1.55	0.60-2.00	0.22-0.24	Low------	1.0-3.0	0.37	0.37	5	6	48
	12-26	24-35	15.0-23.0	5.1-6.5	---	1.40-1.60	0.60-2.00	0.18-0.20	Moderate	0.5-1.0	0.37	0.37			
	26-51	20-34	12.0-21.0	5.6-7.8	0-15	1.40-1.60	0.60-2.00	0.15-0.19	Moderate	0.0-0.5	0.28	0.32			
	51-60	15-20	9.0-13.0	7.4-8.4	10-40	1.45-1.70	0.60-2.00	0.15-0.19	Low------	0.0-0.5	0.24	0.32			
544A:															
Torox-----------	0-10	18-27	12.0-22.0	5.1-7.3	---	1.35-1.55	0.60-2.00	0.22-0.24	Low------	1.0-3.0	0.37	0.37	5	6	48
	10-25	24-35	15.0-23.0	5.1-6.5	---	1.40-1.60	0.60-2.00	0.18-0.22	Moderate	0.5-1.0	0.37	0.37			
	25-42	20-34	12.0-21.0	5.6-7.8	0-20	1.40-1.60	0.60-2.00	0.15-0.19	Moderate	0.0-0.5	0.32	0.32			
	42-65	15-20	9.0-13.0	7.4-8.4	15-40	1.45-1.70	0.60-2.00	0.13-0.19	Low------	0.0-0.5	0.28	0.32			
545A:															
Windere---------	0-9	18-27	14.0-24.0	5.1-7.3	---	1.30-1.50	0.60-2.00	0.22-0.24	Low------	2.0-4.0	0.32	0.32	4	6	48
	9-31	24-35	15.0-25.0	5.1-6.5	---	1.35-1.55	0.60-2.00	0.18-0.20	Moderate	0.5-2.0	0.37	0.37			
	31-50	20-34	12.0-21.0	5.6-7.8	0-20	1.40-1.60	0.60-2.00	0.15-0.19	Moderate	0.2-0.5	0.24	0.32			
	50-65	15-20	9.0-13.0	7.4-8.4	15-40	1.45-1.75	0.60-2.00	0.15-0.19	Low------	0.2-0.5	0.24	0.32			
545B:															
Windere---------	0-9	18-27	14.0-24.0	5.1-7.3	---	1.30-1.50	0.60-2.00	0.22-0.24	Low------	2.0-4.0	0.32	0.32	4	6	48
	9-31	24-35	15.0-25.0	5.1-6.5	---	1.35-1.55	0.60-2.00	0.18-0.20	Moderate	0.5-2.0	0.37	0.37			
	31-50	20-34	12.0-21.0	5.6-7.8	0-20	1.40-1.60	0.60-2.00	0.15-0.19	Moderate	0.2-0.5	0.24	0.32			
	50-65	15-20	9.0-13.0	7.4-8.4	15-40	1.45-1.75	0.60-2.00	0.15-0.19	Low------	0.2-0.5	0.24	0.32			
557A:															
Millstream------	0-14	18-27	14.0-24.0	5.1-7.3	---	1.20-1.35	0.60-2.00	0.22-0.24	Low------	2.0-4.0	0.32	0.32	4	6	48
	14-27	22-35	14.0-23.0	5.1-7.3	---	1.25-1.45	0.60-2.00	0.18-0.20	Moderate	0.5-1.0	0.37	0.37			
	27-47	10-30	6.0-19.0	5.6-7.8	0-20	1.35-1.60	0.60-6.00	0.09-0.20	Moderate	0.0-0.5	0.24	0.32			
	47-60	1-10	1.0-7.0	7.4-8.4	15-40	1.60-1.85	>20.00	0.02-0.04	Low------	0.0-0.5	0.02	0.05			
570A:															
Martinsville----	0-9	8-20	5.0-16.0	5.1-7.3	---	1.30-1.60	0.60-2.00	0.18-0.24	Low------	1.0-3.0	0.28	0.32	5	5	56
	9-37	20-33	8.0-17.0	5.1-7.3	---	1.40-1.60	0.60-2.00	0.15-0.19	Moderate	0.0-0.5	0.28	0.32			
	37-58	15-25	2.0-12.0	5.6-7.8	0-10	1.40-1.65	0.60-2.00	0.10-0.19	Low------	0.0-0.5	0.20	0.24			
	58-64	5-20	1.0-10.0	7.4-8.4	10-40	1.50-1.70	0.60-2.00	0.08-0.17	Low------	0.0-0.5	0.28	0.32			
570B:															
Martinsville----	0-9	8-20	5.0-16.0	5.1-7.3	---	1.30-1.60	0.60-2.00	0.18-0.24	Low------	1.0-3.0	0.28	0.32	5	5	56
	9-37	20-33	8.0-17.0	5.1-7.3	---	1.40-1.60	0.60-2.00	0.15-0.19	Moderate	0.0-0.5	0.28	0.32			
	37-58	15-25	2.0-12.0	5.6-7.8	0-10	1.40-1.65	0.60-2.00	0.10-0.19	Low------	0.0-0.5	0.20	0.24			
	58-64	5-20	1.0-10.0	7.4-8.4	10-40	1.50-1.70	0.60-2.00	0.08-0.17	Low------	0.0-0.5	0.28	0.32			
570C2:															
Martinsville----	0-12	12-20	5.0-16.0	5.1-7.3	---	1.35-1.45	0.60-2.00	0.20-0.22	Low------	0.5-2.0	0.37	0.37	5	5	56
	12-37	20-33	8.0-21.0	5.1-6.5	---	1.40-1.60	0.60-2.00	0.16-0.20	Moderate	0.0-0.5	0.37	0.37			
	37-58	15-25	6.0-15.0	5.1-6.5	---	1.40-1.60	0.60-2.00	0.12-0.17	Low------	0.0-0.2	0.24	0.24			
	58-64	2-20	1.0-12.0	5.6-8.4	0-25	1.50-1.70	0.60-6.00	0.08-0.17	Low------	---	0.24	0.28			

Table 19.--Physical and Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Cation-exchange capacity	Soil reaction	Calcium carbonate	Moist bulk density	Permea-bility	Available water capacity	Shrink-swell potential	Organic matter	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	meq/100g	pH	Pct	g/cc	In/hr	In/in		Pct					
618E:															
Senachwine------	0-9	11-22	7.0-17.0	5.6-7.3	---	1.20-1.65	0.60-2.00	0.17-0.26	Low------	1.0-3.0	0.37	0.37	4	5	56
	9-31	27-35	9.0-20.0	5.1-7.3	---	1.40-1.70	0.60-2.00	0.07-0.21	Moderate	0.0-0.5	0.37	0.37			
	31-40	20-27	4.0-9.0	6.6-7.8	0-20	1.60-1.80	0.20-0.60	0.07-0.17	Low------	0.0-0.5	0.37	0.43			
	40-60	15-25	2.0-7.0	7.4-8.4	20-45	1.75-1.95	0.20-0.60	0.01-0.03	Low------	0.0-0.5	0.37	0.43			
618F:															
Senachwine------	0-9	11-22	7.0-17.0	5.6-7.3	---	1.20-1.65	0.60-2.00	0.17-0.26	Low------	1.0-3.0	0.37	0.37	4	5	56
	9-31	27-35	9.0-20.0	5.1-7.3	---	1.40-1.70	0.60-2.00	0.07-0.21	Moderate	0.0-0.5	0.37	0.37			
	31-40	20-27	4.0-9.0	6.6-7.8	0-20	1.60-1.80	0.20-0.60	0.07-0.17	Low------	0.0-0.5	0.37	0.43			
	40-60	15-25	2.0-7.0	7.4-8.4	20-45	1.75-1.95	0.20-0.60	0.01-0.03	Low------	0.0-0.5	0.37	0.43			
624B:															
Caprell---------	0-10	10-24	8.0-21.0	5.1-7.3	---	1.30-1.45	0.60-2.00	0.20-0.24	Low------	1.0-3.0	0.32	0.32	5	5	56
	10-38	20-34	11.0-23.0	5.1-7.3	---	1.40-1.60	0.60-2.00	0.15-0.19	Moderate	0.5-1.0	0.28	0.32			
	38-47	17-27	10.0-18.0	6.1-8.4	0-30	1.45-1.65	0.60-2.00	0.17-0.19	Low------	0.0-0.5	0.28	0.32			
	47-60	15-20	9.0-13.0	7.4-8.4	25-40	1.45-1.70	0.60-2.00	0.15-0.19	Low------	0.0-0.5	0.24	0.28			
624C2:															
Caprell---------	0-10	10-24	8.0-21.0	5.1-7.3	---	1.30-1.45	0.60-2.00	0.20-0.24	Low------	1.0-3.0	0.32	0.32	5	5	56
	10-38	20-34	11.0-23.0	5.1-7.3	---	1.40-1.60	0.60-2.00	0.15-0.19	Moderate	0.5-1.0	0.28	0.32			
	38-47	17-27	10.0-18.0	6.1-8.4	0-30	1.45-1.65	0.60-2.00	0.17-0.19	Low------	0.0-0.5	0.28	0.32			
	47-60	10-20	9.0-13.0	7.4-8.4	25-40	1.45-1.70	0.60-2.00	0.15-0.19	Low------	0.0-0.5	0.24	0.28			
624D2:															
Caprell---------	0-10	10-24	8.0-21.0	5.1-7.3	---	1.30-1.45	0.60-2.00	0.20-0.24	Low------	1.0-3.0	0.32	0.32	5	5	56
	10-38	20-34	11.0-23.0	5.1-7.3	---	1.40-1.60	0.60-2.00	0.15-0.19	Moderate	0.5-1.0	0.28	0.32			
	38-47	17-27	10.0-18.0	6.1-8.4	0-30	1.45-1.65	0.60-2.00	0.17-0.19	Low------	0.0-0.5	0.28	0.32			
	47-60	10-20	9.0-13.0	7.4-8.4	25-40	1.45-1.70	0.60-2.00	0.15-0.19	Low------	0.0-0.5	0.24	0.28			
624E:															
Caprell---------	0-10	10-24	8.0-21.0	5.1-7.3	---	1.30-1.45	0.60-2.00	0.20-0.24	Low------	1.0-3.0	0.32	0.32	5	5	56
	10-38	20-34	11.0-23.0	5.1-7.3	---	1.40-1.60	0.60-2.00	0.15-0.19	Moderate	0.5-1.0	0.28	0.32			
	38-47	17-27	10.0-18.0	6.1-8.4	0-30	1.45-1.65	0.60-2.00	0.17-0.19	Low------	0.0-0.5	0.28	0.32			
	47-60	10-20	9.0-13.0	7.4-8.4	25-40	1.45-1.70	0.60-2.00	0.15-0.19	Low------	0.0-0.5	0.24	0.28			
625A:															
Geryune---------	0-14	18-27	18.0-26.0	5.6-7.3	---	1.20-1.40	0.60-2.00	0.22-0.24	Low------	4.0-5.0	0.28	0.28	5	6	48
	14-28	24-35	15.0-25.0	5.1-7.3	---	1.30-1.50	0.60-2.00	0.18-0.20	Moderate	0.5-2.0	0.37	0.37			
	28-43	20-34	12.0-21.0	5.6-7.8	0-20	1.40-1.60	0.60-2.00	0.15-0.19	Moderate	0.2-0.5	0.32	0.32			
	43-60	15-20	9.0-13.0	7.4-8.4	15-40	1.45-1.70	0.60-2.00	0.13-0.19	Low------	0.0-0.5	0.24	0.28			
625B:															
Geryune---------	0-14	18-27	18.0-26.0	5.6-7.3	---	1.20-1.40	0.60-2.00	0.22-0.24	Low------	4.0-5.0	0.28	0.28	5	6	48
	14-28	24-35	15.0-25.0	5.1-7.3	---	1.30-1.50	0.60-2.00	0.18-0.20	Moderate	0.5-2.0	0.37	0.37			
	28-43	20-34	12.0-21.0	5.6-7.8	0-20	1.40-1.60	0.60-2.00	0.15-0.19	Moderate	0.2-0.5	0.32	0.32			
	43-60	15-20	9.0-13.0	7.4-8.4	15-40	1.45-1.70	0.60-2.00	0.13-0.19	Low------	0.0-0.5	0.24	0.28			

Table 19.--Physical and Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Cation-exchange capacity	Soil reaction	Calcium carbonate	Moist bulk density	Permea-bility	Available water capacity	Shrink-swell potential	Organic matter	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	meq/100g	pH	Pct	g/cc	In/hr	In/in		Pct					
626A:															
Kish------------	0-11	20-27	20.0-28.0	7.4-8.4	5-15	1.40-1.60	0.60-2.00	0.20-0.24	Low------	4.0-6.0	0.24	0.24	4	4L	86
	11-47	18-32	11.0-23.0	7.4-8.4	10-20	1.40-1.60	0.60-2.00	0.15-0.19	Moderate	0.0-2.0	0.32	0.32			
	47-60	7-18	7.0-20.0	7.4-8.4	25-40	1.45-1.70	0.60-2.00	0.07-0.19	Low------	0.0-1.0	0.32	0.32			
635A:															
Lismod----------	0-11	18-27	18.0-26.0	5.1-7.3	---	1.20-1.40	0.60-2.00	0.22-0.24	Low------	4.0-5.0	0.28	0.28	4	6	48
	11-36	24-35	15.0-25.0	5.1-7.3	---	1.30-1.50	0.60-2.00	0.18-0.20	Moderate	0.5-2.0	0.37	0.37			
	36-39	20-34	12.0-21.0	5.6-7.8	0-20	1.40-1.60	0.60-2.00	0.15-0.19	Moderate	0.2-0.5	0.32	0.32			
	39-60	15-20	9.0-13.0	7.4-8.4	15-40	1.45-1.70	0.60-2.00	0.13-0.19	Low------	0.0-0.5	0.24	0.28			
635B:															
Lismod----------	0-11	18-27	18.0-26.0	5.1-7.3	---	1.20-1.40	0.60-2.00	0.22-0.24	Low------	4.0-5.0	0.28	0.28	4	6	48
	11-36	24-35	15.0-25.0	5.1-7.3	---	1.30-1.50	0.60-2.00	0.18-0.20	Moderate	0.5-2.0	0.37	0.37			
	36-39	20-34	12.0-21.0	5.6-7.8	0-20	1.40-1.60	0.60-2.00	0.15-0.19	Moderate	0.2-0.5	0.32	0.32			
	39-60	15-20	9.0-13.0	7.4-8.4	15-40	1.45-1.70	0.60-2.00	0.13-0.19	Low------	0.0-0.5	0.24	0.28			
636B:															
Parmod----------	0-12	18-27	12.0-24.0	5.6-7.3	---	1.30-1.45	0.60-2.00	0.20-0.24	Low------	2.0-4.0	0.24	0.24	5	6	48
	12-38	22-34	13.0-22.0	5.6-7.8	0-20	1.40-1.60	0.60-2.00	0.15-0.19	Moderate	0.5-1.0	0.32	0.32			
	38-60	15-20	9.0-13.0	7.4-8.4	15-40	1.50-1.70	0.60-2.00	0.12-0.19	Low------	0.2-0.5	0.32	0.32			
656B:															
Octagon---------	0-13	15-27	10.0-25.0	5.6-7.3	---	1.30-1.40	0.60-2.00	0.20-0.24	Low------	2.0-4.0	0.28	0.28	4	6	48
	13-30	22-30	9.0-20.0	5.6-7.3	---	1.35-1.50	0.60-2.00	0.15-0.19	Moderate	0.5-1.0	0.28	0.28			
	30-60	9-20	3.0-10.0	7.4-8.4	10-35	1.70-1.90	0.20-0.60	0.05-0.10	Low------	0.0-0.2	0.37	0.43			
656C2:															
Octagon---------	0-13	15-27	10.0-25.0	5.6-7.3	---	1.30-1.40	0.60-2.00	0.20-0.24	Low------	2.0-4.0	0.28	0.28	4	6	48
	13-30	22-30	9.0-20.0	5.6-7.3	---	1.35-1.50	0.60-2.00	0.15-0.19	Moderate	0.5-1.0	0.28	0.28			
	30-60	9-20	3.0-10.0	7.4-8.4	10-35	1.70-1.90	0.20-0.60	0.05-0.10	Low------	0.0-0.2	0.37	0.43			
791A:															
Rush------------	0-11	10-20	5.0-16.0	5.1-7.3	---	1.25-1.40	0.60-2.00	0.22-0.24	Low------	0.5-2.0	0.37	0.37	5	5	56
	11-38	22-30	9.0-20.0	4.5-6.5	---	1.35-1.50	0.60-2.00	0.18-0.20	Moderate	0.5-1.0	0.37	0.37			
	38-45	20-30	9.0-20.0	4.5-6.5	---	1.40-1.55	0.60-2.00	0.15-0.19	Moderate	0.2-1.0	0.37	0.43			
	45-60	2-6	1.0-5.0	7.4-8.4	10-35	1.60-1.80	>20.00	0.02-0.04	Low------	0.0-0.5	0.10	0.37			
791B:															
Rush------------	0-11	10-20	5.0-16.0	5.1-7.3	---	1.25-1.40	0.60-2.00	0.22-0.24	Low------	0.5-2.0	0.37	0.37	5	5	56
	11-38	22-30	9.0-20.0	4.5-6.5	---	1.35-1.50	0.60-2.00	0.18-0.20	Moderate	0.5-1.0	0.37	0.37			
	38-45	20-30	9.0-20.0	4.5-6.5	---	1.40-1.55	0.60-2.00	0.15-0.19	Moderate	0.2-1.0	0.37	0.43			
	45-60	2-6	1.0-5.0	7.4-8.4	10-35	1.60-1.80	>20.00	0.02-0.04	Low------	0.0-0.5	0.10	0.37			

Table 19.--Physical and Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Cation-exchange capacity	Soil reaction	Calcium carbonate	Moist bulk density	Permea-bility	Available water capacity	Shrink-swell potential	Organic matter	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	meq/100g	pH	Pct	g/cc	In/hr	In/in		Pct					
791C2:															
Rush------------	0-11	10-20	5.0-16.0	5.1-7.3	---	1.25-1.40	0.60-2.00	0.22-0.24	Low------	0.5-2.0	0.37	0.37	5	5	56
	11-38	22-30	9.0-20.0	4.5-6.5	---	1.35-1.50	0.60-2.00	0.18-0.20	Moderate	0.5-1.0	0.37	0.37			
	38-45	20-30	9.0-20.0	4.5-6.5	---	1.40-1.55	0.60-2.00	0.15-0.19	Moderate	0.2-1.0	0.37	0.43			
	45-60	2-6	1.0-5.0	7.4-8.4	10-35	1.60-1.80	>20.00	0.02-0.04	Low------	0.0-0.5	0.10	0.37			
792A:															
Bowes-----------	0-13	20-27	16.0-24.0	5.1-7.3	---	1.35-1.55	0.60-2.00	0.22-0.25	Low------	2.0-4.0	0.32	0.32	4	6	48
	13-43	27-35	16.0-23.0	5.1-6.5	---	1.30-1.50	0.60-2.00	0.18-0.20	Moderate	0.0-1.0	0.43	0.43			
	43-51	10-30	6.0-18.0	5.1-8.4	0-10	1.55-1.75	0.60-6.00	0.10-0.16	Low------	0.0-0.5	0.17	0.24			
	51-61	3-10	2.0-7.0	7.4-8.4	10-40	1.60-1.80	>20.00	0.02-0.04	Low------	0.0-0.5	0.10	---			
792B:															
Bowes-----------	0-13	20-27	16.0-24.0	5.1-7.3	---	1.35-1.55	0.60-2.00	0.22-0.25	Low------	2.0-4.0	0.32	0.32	4	6	48
	13-43	27-35	16.0-23.0	5.1-6.5	---	1.30-1.50	0.60-2.00	0.18-0.20	Moderate	0.0-1.0	0.43	0.43			
	43-51	10-30	6.0-18.0	5.1-8.4	0-10	1.55-1.75	0.60-6.00	0.10-0.16	Low------	0.0-0.5	0.17	0.24			
	51-61	3-10	2.0-7.0	7.4-8.4	10-40	1.60-1.80	>20.00	0.02-0.04	Low------	0.0-0.5	0.10	---			
802B:															
Orthents,loamy--	0-8	22-30	10.0-25.0	5.6-7.8	0-10	1.70-1.75	0.20-0.60	0.18-0.22	Moderate	0.5-2.0	0.43	0.43	5	4	86
	8-60	22-30	10.0-20.0	5.6-7.8	0-20	1.70-1.80	0.20-0.60	0.16-0.20	Moderate	0.2-1.0	0.43	0.43			
865:															
Pits, gravel.															
969E2:															
Casco-----------	0-8	10-20	4.0-20.0	5.6-7.3	---	1.35-1.55	0.60-2.00	0.19-0.24	Low------	1.0-3.0	0.32	0.32	3	5	56
	8-17	18-35	4.0-30.0	5.6-7.8	0-3	1.55-1.65	0.60-2.00	0.09-0.19	Moderate	0.0-0.5	0.32	0.32			
	17-60	0-2	0.0-3.0	7.4-8.4	1-25	1.30-1.70	>20.00	0.02-0.04	Low------	0.0-0.5	0.10	0.10			
Rodman----------	0-11	8-25	5.0-18.0	6.6-7.8	0-15	1.20-1.50	2.00-6.00	0.10-0.12	Low------	2.0-4.0	0.20	0.32	3	8	---
	11-14	5-25	1.0-14.0	6.6-7.8	0-25	1.10-1.50	2.00-6.00	0.09-0.12	Low------	0.0-2.0	0.20	0.32			
	14-60	0-10	1.0-6.0	7.4-8.4	10-45	1.60-1.70	>20.00	0.02-0.04	Low------	0.0-1.0	0.10	0.37			
969F:															
Casco-----------	0-8	10-20	4.0-20.0	5.6-7.3	---	1.35-1.55	0.60-2.00	0.19-0.24	Low------	1.0-3.0	0.32	0.32	3	5	56
	8-17	18-35	4.0-30.0	5.6-7.8	0-3	1.55-1.65	0.60-2.00	0.09-0.19	Moderate	0.0-0.5	0.32	0.32			
	17-60	0-2	0.0-3.0	7.4-8.4	1-25	1.30-1.70	>20.00	0.02-0.04	Low------	0.0-0.5	0.10	0.10			
Rodman----------	0-11	8-25	5.0-18.0	6.6-7.8	0-15	1.20-1.50	2.00-6.00	0.10-0.12	Low------	2.0-4.0	0.20	0.32	3	8	---
	11-14	5-25	1.0-14.0	6.6-7.8	0-25	1.10-1.50	2.00-6.00	0.09-0.12	Low------	0.0-2.0	0.20	0.32			
	14-60	0-10	1.0-6.0	7.4-8.4	10-45	1.60-1.70	>20.00	0.02-0.04	Low------	0.0-1.0	0.10	0.37			

Table 19.--Physical and Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Cation-exchange capacity	Soil reaction	Calcium carbonate	Moist bulk density	Permea-bility	Available water capacity	Shrink-swell potential	Organic matter	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	meq/100g	pH	Pct	g/cc	In/hr	In/in		Pct					
1067A:															
Harpster--------	0-18	22-27	23.0-28.0	7.4-8.4	10-40	1.05-1.25	0.60-2.00	0.21-0.24	Moderate	5.0-6.0	0.28	0.28	5	4L	86
	18-34	27-35	17.0-23.0	7.4-8.4	5-40	1.20-1.50	0.60-2.00	0.18-0.22	Moderate	0.5-1.0	0.28	0.28			
	34-43	22-35	13.0-22.0	7.4-8.4	5-40	1.25-1.55	0.60-2.00	0.17-0.22	Moderate	0.0-0.5	0.28	0.28			
	43-60	15-30	9.0-18.0	7.4-8.4	10-40	1.40-1.60	0.60-2.00	0.11-0.22	Low------	0.0-0.1	0.28	0.28			
1082A:															
Millington------	0-14	20-27	20.0-28.0	7.4-8.4	5-20	1.40-1.60	0.60-2.00	0.20-0.24	Low------	4.0-6.0	0.28	0.28	5	4L	86
	14-37	18-35	12.0-27.0	7.4-8.4	5-30	1.40-1.60	0.60-2.00	0.17-0.20	Moderate	1.0-3.0	0.28	0.28			
	37-60	18-35	11.0-25.0	7.4-8.4	10-30	1.50-1.70	0.60-2.00	0.14-0.20	Moderate	0.1-2.0	0.28	0.28			
1100A:															
Palms-----------	0-6	---	150-200	5.1-7.8	---	0.30-0.40	0.20-6.00	0.35-0.45	---	75-99	---	---	2	2	134
	6-32	---	150-200	5.1-7.8	---	0.15-0.30	0.20-6.00	0.35-0.45	---	75-99	---	---			
	32-60	7-35	2.0-14.0	6.1-8.4	0-20	1.45-1.75	0.20-2.00	0.14-0.22	Low------	---	0.37	0.37			
1103A:															
Houghton--------	0-7	---	140-200	4.5-7.8	---	0.20-0.35	0.20-6.00	0.35-0.45	---	70-99	---	---	3	2	134
	7-60	---	100-200	4.5-7.8	---	0.15-0.25	0.20-6.00	0.35-0.45	---	70-99	---	---			
1153A:															
Pella-----------	0-14	27-35	25.0-30.0	6.1-7.8	---	1.10-1.30	0.60-2.00	0.21-0.23	Moderate	5.0-6.0	0.28	0.28	5	7	38
	14-39	27-35	15.0-20.0	6.6-7.8	0-10	1.20-1.45	0.60-2.00	0.21-0.24	Moderate	0.5-1.0	0.28	0.28			
	39-50	15-30	10.0-20.0	7.4-8.4	5-30	1.35-1.60	0.60-2.00	0.15-0.20	Moderate	0.2-0.5	0.28	0.37			
	50-60	15-30	10.0-20.0	7.4-8.4	5-40	1.40-1.70	0.60-2.00	0.10-0.22	Low------	0.0-0.2	0.28	0.37			
1206A:															
Thorp-----------	0-11	20-27	20.0-28.0	5.1-7.8	---	1.15-1.35	0.20-0.60	0.22-0.24	Low------	4.0-6.0	0.37	0.37	5	6	48
	11-22	18-25	11.0-17.0	5.1-7.3	---	1.30-1.50	0.20-0.60	0.20-0.22	Low------	0.2-1.0	0.37	0.37			
	22-38	22-35	13.0-22.0	5.1-7.3	---	1.35-1.55	0.06-0.20	0.18-0.20	Moderate	0.2-0.5	0.37	0.37			
	38-60	18-30	12.0-19.0	5.6-7.8	0-5	1.40-1.60	0.06-0.20	0.15-0.22	Moderate	0.2-0.5	0.37	0.37			
1210A:															
Lena------------	0-11	---	---	7.4-8.4	---	0.15-0.45	2.00-6.00	0.35-0.45	---	60-99	---	---	3	2	134
	11-60	---	---	7.4-8.4	---	0.15-0.45	2.00-6.00	0.35-0.45	---	---	---	---			
1330A:															
Peotone---------	0-22	33-40	29.0-38.0	5.6-7.8	---	1.20-1.40	0.20-0.60	0.21-0.23	High-----	5.0-7.0	0.28	0.28	5	4	86
	22-43	35-45	22.0-33.0	6.1-7.8	---	1.30-1.60	0.20-0.60	0.11-0.20	High-----	0.5-3.0	0.28	0.28			
	43-60	25-42	15.0-26.0	6.6-8.4	0-15	1.40-1.65	0.20-0.60	0.18-0.20	High-----	0.2-0.5	0.28	0.28			
1488A:															
Hooppole--------	0-17	20-27	15.0-32.0	7.4-8.4	5-15	1.40-1.60	0.60-2.00	0.20-0.24	Moderate	4.0-8.0	0.28	0.28	4	4L	86
	17-44	25-35	12.0-29.0	7.4-8.4	12-18	1.35-1.50	0.60-2.00	0.15-0.19	Moderate	0.5-2.0	0.28	0.28			
	44-60	2-12	1.0-8.0	7.4-8.4	10-15	1.65-1.80	6.00-20.00	0.05-0.10	Low------	0.0-0.5	0.17	0.17			

Table 19.--Physical and Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Cation-exchange capacity	Soil reaction	Calcium carbonate	Moist bulk density	Permea-bility	Available water capacity	Shrink-swell potential	Organic matter	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	meq/100g	pH	Pct	g/cc	In/hr	In/in		Pct					
1529A:															
Selmass---------	0-15	18-27	20.0-27.0	5.6-7.3	---	1.35-1.45	0.60-2.00	0.20-0.24	Low------	4.0-5.0	0.24	0.24	4	6	48
	15-42	20-30	13.0-25.0	5.6-7.3	---	1.40-1.55	0.60-2.00	0.15-0.19	Moderate	0.5-2.0	0.32	0.32			
	42-47	10-20	6.0-18.0	6.1-7.8	0-10	1.45-1.65	0.60-6.00	0.08-0.19	Low------	0.0-0.5	0.24	0.28			
	47-60	1-10	1.0-7.0	6.6-8.4	0-20	1.55-1.70	6.00-20.00	0.02-0.10	Low------	0.0-0.5	0.10	0.10			
1626A:															
Kish------------	0-11	20-27	20.0-28.0	7.4-8.4	5-15	1.40-1.60	0.60-2.00	0.20-0.24	Low------	4.0-6.0	0.24	0.24	4	4L	86
	11-47	18-32	11.0-23.0	7.4-8.4	10-20	1.40-1.60	0.60-2.00	0.15-0.19	Moderate	0.0-2.0	0.32	0.32			
	47-60	7-18	7.0-20.0	7.4-8.4	25-40	1.45-1.70	0.60-2.00	0.07-0.19	Low------	0.0-1.0	0.32	0.32			
1776A:															
Comfrey---------	0-7	18-27	---	6.6-7.8	---	1.20-1.40	0.60-2.00	0.20-0.24	Low------	6.0-10	0.28	0.28	5	6	48
	7-26	18-35	---	6.6-7.8	---	1.20-1.40	0.60-2.00	0.16-0.20	Moderate	---	0.28	0.28			
	26-63	18-35	---	6.6-8.4	---	1.30-1.50	0.60-2.00	0.15-0.19	Moderate	---	0.28	0.28			
4103A:															
Houghton--------	0-7	---	150-230	6.6-7.3	---	0.08-0.30	0.20-6.00	0.35-0.45	---	70-99	---	---	3	8	---
	7-60	---	150-230	6.6-7.3	---	0.13-0.23	0.20-6.00	0.35-0.45	---	70-99	---	---			
8082A:															
Millington------	0-14	20-27	20.0-28.0	7.4-8.4	5-20	1.40-1.60	0.60-2.00	0.20-0.24	Low------	4.0-6.0	0.28	0.28	5	4L	86
	14-37	18-35	12.0-27.0	7.4-8.4	5-30	1.40-1.60	0.60-2.00	0.17-0.20	Moderate	1.0-3.0	0.28	0.28			
	37-60	18-35	11.0-25.0	7.4-8.4	10-30	1.50-1.70	0.60-2.00	0.14-0.20	Moderate	0.1-2.0	0.28	0.28			
8776A:															
Comfrey---------	0-7	18-27	---	6.6-7.8	---	1.20-1.40	0.60-2.00	0.20-0.24	Low------	6.0-10	0.28	0.28	5	6	48
	7-26	18-35	---	6.6-7.8	---	1.20-1.40	0.60-2.00	0.16-0.20	Moderate	---	0.28	0.28			
	26-63	18-35	---	6.6-8.4	---	1.30-1.50	0.60-2.00	0.15-0.19	Moderate	---	0.28	0.28			

Table 20.--Water Features

("Flooding" and "water table" and terms such as "occasional," "brief," "apparent," and "perched" are explained in the text. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Map symbol and soil name	Hydro-logic group	Flooding			High water table and ponding			
		Frequency	Duration	Months	Water table depth	Kind of water table	Months	Maximum ponding depth
					Ft			Ft
59A:								
Lisbon	B	None	---	---	1.0-2.5	Perched	Feb-Jun	---
59B:								
Lisbon	B	None	---	---	1.0-2.5	Perched	Feb-Jun	---
60C2:								
La Rose	B	None	---	---	>6.0	---	---	---
62A:								
Herbert	B	None	---	---	1.0-2.5	Perched	Feb-Jun	---
67A:								
Harpster	B	None	---	---	0.0-1.5	Apparent	Feb-Jun	0.5
87A:								
Dickinson	B	None	---	---	>6.0	---	---	---
87B:								
Dickinson	B	None	---	---	>6.0	---	---	---
87B2:								
Dickinson	B	None	---	---	>6.0	---	---	---
100A:								
Palms	A/D	None	---	---	0.0-1.0	Apparent	Nov-May	1.0
103A:								
Houghton	A/D	None	---	---	0.0-1.0	Apparent	Nov-Jun	1.0
104A:								
Virgil	B	None	---	---	1.0-2.0	Apparent	Feb-Jun	---
134A:								
Camden	B	None	---	---	>6.0	---	---	---
134B:								
Camden	B	None	---	---	>6.0	---	---	---
146A:								
Elliott	C	None	---	---	1.0-2.5	Perched	Feb-Jun	---
146B:								
Elliott	C	None	---	---	1.0-2.5	Perched	Feb-Jun	---
148A:								
Proctor	B	None	---	---	>6.0	---	---	---
148B:								
Proctor	B	None	---	---	>6.0	---	---	---
149A:								
Brenton	B	None	---	---	1.0-2.5	Apparent	Feb-Jun	---
152A:								
Drummer	B	None	---	---	0.0-1.5	Apparent	Feb-Jun	0.5

Table 20.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table and ponding: Water table depth	Kind of water table	Months	Maximum ponding depth
					Ft			Ft
153A:								
Pella	B/D	None	---	---	0.0-1.5	Apparent	Feb-Jun	0.5
153A+:								
Pella	B/D	None	---	---	0.0-1.5	Apparent	Feb-Jun	0.5
172A:								
Hoopeston	B	None	---	---	1.0-2.5	Apparent	Feb-Jun	---
189A:								
Martinton	C	None	---	---	1.0-2.5	Apparent	Feb-Jun	---
197A:								
Troxel	B	None	---	---	>6.0	---	---	---
198A:								
Elburn	B	None	---	---	1.0-2.5	Apparent	Feb-Jun	---
206A:								
Thorp	C	None	---	---	0.0-1.0	Apparent	Feb-Jun	0.5
210A:								
Lena	A/D	None	---	---	0.0-1.0	Apparent	Nov-Jun	1.0
219A:								
Millbrook	B	None	---	---	1.0-2.5	Apparent	Feb-Jun	---
221B:								
Parr	B	None	---	---	2.0-3.5	Perched	Feb-May	---
221C2:								
Parr	B	None	---	---	2.0-3.5	Perched	Feb-May	---
223B:								
Varna	C	None	---	---	2.0-3.5	Perched	Feb-Jun	---
223C2:								
Varna	C	None	---	---	2.0-3.5	Perched	Feb-Jun	---
223D2:								
Varna	C	None	---	---	2.0-3.5	Perched	Feb-Jun	---
228B:								
Nappanee	D	None	---	---	1.0-2.0	Perched	Feb-May	---
232A:								
Ashkum	B	None	---	---	0.0-1.0	Apparent	Feb-Jun	0.5
290A:								
Warsaw	B	None	---	---	>6.0	---	---	---
290B:								
Warsaw	B	None	---	---	>6.0	---	---	---
290C2:								
Warsaw	B	None	---	---	>6.0	---	---	---
297A:								
Ringwood	B	None	---	---	>6.0	---	---	---
297B:								
Ringwood	B	None	---	---	>6.0	---	---	---

Table 20.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table and ponding: Water table depth	High water table and ponding: Kind of water table	High water table and ponding: Months	High water table and ponding: Maximum ponding depth
					Ft			Ft
298B:								
Beecher	C	None	---	---	1.0-2.5	Perched	Feb-Jun	---
310B:								
McHenry	B	None	---	---	>6.0	---	---	---
318A:								
Lorenzo	B	None	---	---	>6.0	---	---	---
318B:								
Lorenzo	B	None	---	---	>6.0	---	---	---
318C2:								
Lorenzo	B	None	---	---	>6.0	---	---	---
318D2:								
Lorenzo	B	None	---	---	>6.0	---	---	---
323B:								
Casco	B	None	---	---	>6.0	---	---	---
323C2:								
Casco	B	None	---	---	>6.0	---	---	---
323C3:								
Casco	B	None	---	---	>6.0	---	---	---
323D2:								
Casco	B	None	---	---	>6.0	---	---	---
323D3:								
Casco	B	None	---	---	>6.0	---	---	---
325A:								
Dresden	B	None	---	---	>6.0	---	---	---
325B:								
Dresden	B	None	---	---	>6.0	---	---	---
327A:								
Fox	B	None	---	---	>6.0	---	---	---
327B:								
Fox	B	None	---	---	>6.0	---	---	---
327C2:								
Fox	B	None	---	---	>6.0	---	---	---
327D2:								
Fox	B	None	---	---	>6.0	---	---	---
329A:								
Will	B/D	None	---	---	0.0-1.5	Apparent	Feb-Jun	0.5
330A:								
Peotone	B	None	---	---	0.0-1.0	Apparent	Feb-Jun	0.5
343A:								
Kane	B	None	---	---	1.0-2.5	Apparent	Feb-Jun	---
344A:								
Harvard	B	None	---	---	>6.0	---	---	---

Table 20.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table and ponding: Water table depth	High water table and ponding: Kind of water table	High water table and ponding: Months	High water table and ponding: Maximum ponding depth
					Ft			Ft
344B:								
Harvard----------	B	None	---	---	>6.0	---	---	---
361B:								
Kidder----------	B	None	---	---	>6.0	---	---	---
361C:								
Kidder----------	B	None	---	---	>6.0	---	---	---
361C2:								
Kidder----------	B	None	---	---	>6.0	---	---	---
361C3:								
Kidder----------	B	None	---	---	>6.0	---	---	---
361D2:								
Kidder----------	B	None	---	---	>6.0	---	---	---
361D3:								
Kidder----------	B	None	---	---	>6.0	---	---	---
361E:								
Kidder----------	B	None	---	---	>6.0	---	---	---
361E2:								
Kidder----------	B	None	---	---	>6.0	---	---	---
361F:								
Kidder----------	B	None	---	---	>6.0	---	---	---
363B:								
Griswold--------	B	None	---	---	>6.0	---	---	---
363C2:								
Griswold--------	B	None	---	---	>6.0	---	---	---
363D2:								
Griswold--------	B	None	---	---	>6.0	---	---	---
369A:								
Waupecan--------	B	None	---	---	>6.0	---	---	---
369B:								
Waupecan--------	B	None	---	---	>6.0	---	---	---
379A:								
Dakota----------	B	None	---	---	>6.0	---	---	---
379B:								
Dakota----------	B	None	---	---	>6.0	---	---	---
488A:								
Hooppole--------	B/D	None	---	---	0.0-1.0	Apparent	Feb-Jun	0.5
503B:								
Rockton---------	B	None	---	---	>6.0	---	---	---
512A:								
Danabrook-------	B	None	---	---	2.0-3.5	Perched	Feb-Jun	---
512B:								
Danabrook-------	B	None	---	---	2.0-3.5	Perched	Feb-Jun	---

Table 20.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	Water table depth	Kind of water table	Months	Maximum ponding depth
					Ft			Ft
523A:								
Dunham	B	None	---	---	0.0-1.5	Apparent	Feb-Jun	0.5
526A:								
Grundelein	B	None	---	---	1.0-2.5	Apparent	Feb-Jun	---
527B:								
Kidami	B	None	---	---	2.0-3.5	Perched	Feb-Jun	---
527C:								
Kidami	B	None	---	---	2.0-3.5	Perched	Feb-Jun	---
527C2:								
Kidami	B	None	---	---	2.0-3.5	Perched	Feb-Jun	---
527D:								
Kidami	B	None	---	---	2.0-3.5	Perched	Feb-Jun	---
527D2:								
Kidami	B	None	---	---	2.0-3.5	Perched	Feb-Jun	---
527D3:								
Kidami	B	None	---	---	2.0-3.5	Perched	Feb-Jun	---
528A:								
Lahoguess	B	None	---	---	1.0-2.5	Apparent	Feb-Jun	---
529A:								
Selmass	B	None	---	---	0.0-1.5	Apparent	Feb-Jun	0.5
530B:								
Ozaukee	C	None	---	---	2.0-3.5	Perched	Feb-Apr	---
530C2:								
Ozaukee	C	None	---	---	2.0-3.5	Perched	Feb-Apr	---
530C3:								
Ozaukee	C	None	---	---	2.0-3.5	Perched	Feb-Apr	---
530D2:								
Ozaukee	C	None	---	---	2.0-3.5	Perched	Feb-Apr	---
530D3:								
Ozaukee	C	None	---	---	2.0-3.5	Perched	Feb-Apr	---
530E:								
Ozaukee	C	None	---	---	2.0-3.5	Perched	Feb-Apr	---
543B:								
Piscasaw	B	None	---	---	>6.0	---	---	---
544A:								
Torox	B	None	---	---	1.0-2.5	Apparent	Feb-Jun	---
545A:								
Windere	B	None	---	---	2.0-3.5	Apparent	Feb-Jun	---
545B:								
Windere	B	None	---	---	2.0-3.5	Apparent	Feb-Jun	---
557A:								
Millstream	B	None	---	---	1.0-2.5	Apparent	Feb-Jun	---

Table 20.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table and ponding: Water table depth	Kind of water table	Months	Maximum ponding depth
					Ft			Ft
570A:								
Martinsville----	B	None	---	---	>6.0	---	---	---
570B:								
Martinsville----	B	None	---	---	>6.0	---	---	---
570C2:								
Martinsville----	B	None	---	---	>6.0	---	---	---
618E:								
Senachwine------	B	None	---	---	>6.0	---	---	---
618F:								
Senachwine------	B	None	---	---	>6.0	---	---	---
624B:								
Caprell---------	B	None	---	---	>6.0	---	---	---
624C2:								
Caprell---------	B	None	---	---	>6.0	---	---	---
624D2:								
Caprell---------	B	None	---	---	>6.0	---	---	---
624E:								
Caprell---------	B	None	---	---	>6.0	---	---	---
625A:								
Geryune---------	B	None	---	---	2.0-3.5	Apparent	Feb-Apr	---
625B:								
Geryune---------	B	None	---	---	2.0-3.5	Apparent	Feb-Apr	---
626A:								
Kish------------	B	None	---	---	0.0-1.5	Apparent	Feb-Jun	0.5
635A:								
Lismod----------	B	None	---	---	1.0-2.5	Apparent	Feb-Jun	---
635B:								
Lismod----------	B	None	---	---	1.0-2.5	Apparent	Feb-Jun	---
636B:								
Parmod----------	B	None	---	---	>6.0	---	---	---
656B:								
Octagon---------	B	None	---	---	2.0-3.5	Perched	Feb-May	---
656C2:								
Octagon---------	B	None	---	---	2.0-3.5	Perched	Feb-May	---
791A:								
Rush------------	B	None	---	---	>6.0	---	---	---
791B:								
Rush------------	B	None	---	---	>6.0	---	---	---
791C2:								
Rush------------	B	None	---	---	>6.0	---	---	---
792A:								
Bowes-----------	B	None	---	---	>6.0	---	---	---

Table 20.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table and ponding: Water table depth	Kind of water table	Months	Maximum ponding depth
					Ft			Ft
792B:								
Bowes-----------	B	None	---	---	>6.0	---	---	---
802B:								
Orthents,loamy--	B	None	---	---	>4.0	Perched	Jan-May	---
865:								
Pits, gravel.								
969E2:								
Casco-----------	B	None	---	---	>6.0	---	---	---
Rodman----------	A	None	---	---	>6.0	---	---	---
969F:								
Casco-----------	B	None	---	---	>6.0	---	---	---
Rodman----------	A	None	---	---	>6.0	---	---	---
1067A:								
Harpster--------	B	None	---	---	0.0-1.0	Apparent	Feb-Jun	0.5
1082A:								
Millington------	B/D	Occasional	Brief	Apr-Jun	0.0-1.5	Apparent	Feb-Jul	0.5
1100A:								
Palms-----------	A/D	None	---	---	0.0-1.0	Apparent	Nov-May	1.0
1103A:								
Houghton--------	A/D	None	---	---	0.0-1.0	Apparent	Nov-Jun	1.0
1153A:								
Pella-----------	B/D	None	---	---	0.0-1.5	Apparent	Dec-Jun	0.5
1206A:								
Thorp-----------	D	None	---	---	0.0-0.5	Apparent	Nov-Jun	0.5
1210A:								
Lena------------	A/D	None	---	---	0.0-1.0	Apparent	Nov-Jun	1.0
1330A:								
Peotone---------	D	None	---	---	1.0-0.5	Apparent	Feb-Jul	1.0
1488A:								
Hooppole--------	B/D	None	---	---	0.0-1.0	Apparent	Feb-Jun	0.5
1529A:								
Selmass---------	D	None	---	---	0.0-1.0	Apparent	Feb-Jun	0.5
1626A:								
Kish------------	D	None	---	---	0.0-1.5	Apparent	Feb-Jun	0.5
1776A:								
Comfrey---------	B/D	Occasional	Brief	Feb-Jul	0.0-1.5	Apparent	Feb-Jul	---
4103A:								
Houghton--------	D	None	---	---	0.0-0.5	Apparent	Sep-Jun	2.0
8082A:								
Millington------	B/D	Occasional	Brief	Apr-Jun	0.0-1.5	Apparent	Feb-Jun	0.5

Table 20.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table and ponding: Water table depth	High water table and ponding: Kind of water table	High water table and ponding: Months	High water table and ponding: Maximum ponding depth
					Ft			Ft
8776A:								
Comfrey---------	B/D	Occasional	Brief	Feb-Jul	0.0-1.5	Apparent	Feb-Jun	---

Table 21.--Soil Features

(Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Map symbol and soil name	Bedrock		Subsidence		Potential frost action	Risk of corrosion	
	Depth	Hardness	Initial	Total		Uncoated steel	Concrete
	In		In	In			
59A:							
Lisbon----------	>60	---	---	---	High--------	High--------	Moderate.
59B:							
Lisbon----------	>60	---	---	---	High--------	High--------	Moderate.
60C2:							
La Rose---------	>60	---	---	---	Moderate----	Moderate----	Low.
62A:							
Herbert---------	>60	---	---	---	High--------	High--------	Moderate.
67A:							
Harpster--------	>60	---	---	---	High--------	High--------	Low.
87A:							
Dickinson-------	>60	---	---	---	Moderate----	Low---------	Moderate.
87B:							
Dickinson-------	>60	---	---	---	Moderate----	Low---------	Moderate.
87B2:							
Dickinson-------	>60	---	---	---	Moderate----	Low---------	Moderate.
100A:							
Palms-----------	>60	---	4-15	25-32	High--------	High--------	Moderate.
103A:							
Houghton--------	>60	---	6-18	55-60	High--------	High--------	Moderate.
104A:							
Virgil----------	>60	---	---	---	High--------	High--------	Moderate.
134A:							
Camden----------	>60	---	---	---	High--------	Low---------	Moderate.
134B:							
Camden----------	>60	---	---	---	High--------	Low---------	Moderate.
146A:							
Elliott---------	>60	---	---	---	High--------	High--------	Moderate.
146B:							
Elliott---------	>60	---	---	---	High--------	High--------	Moderate.
148A:							
Proctor---------	>60	---	---	---	High--------	Moderate----	Moderate.
148B:							
Proctor---------	>60	---	---	---	High--------	Moderate----	Moderate.
149A:							
Brenton---------	>60	---	---	---	High--------	High--------	Moderate.
152A:							
Drummer---------	>60	---	---	---	High--------	High--------	Moderate.

Table 21.--Soil Features--Continued

Map symbol and soil name	Bedrock: Depth	Bedrock: Hardness	Subsidence: Initial	Subsidence: Total	Potential frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
	In		In	In			
153A:							
Pella-----------	>60	---	---	---	High--------	High--------	Low.
153A+:							
Pella-----------	>60	---	---	---	High--------	High--------	Low.
172A:							
Hoopeston-------	>60	---	---	---	High--------	Low---------	Moderate.
189A:							
Martinton-------	>60	---	---	---	High--------	High--------	Moderate.
197A:							
Troxel----------	>60	---	---	---	High--------	Low---------	Moderate.
198A:							
Elburn----------	>60	---	---	---	High--------	High--------	Moderate.
206A:							
Thorp-----------	>60	---	---	---	High--------	High--------	Moderate.
210A:							
Lena------------	>60	---	---	50-90	High--------	High--------	Low.
219A:							
Millbrook-------	>60	---	---	---	High--------	High--------	Moderate.
221B:							
Parr------------	>60	---	---	---	Moderate----	High--------	Moderate.
221C2:							
Parr------------	>60	---	---	---	Moderate----	High--------	Moderate.
223B:							
Varna-----------	>60	---	---	---	High--------	Moderate----	Moderate.
223C2:							
Varna-----------	>60	---	---	---	High--------	Moderate----	Moderate.
223D2:							
Varna-----------	>60	---	---	---	High--------	Moderate----	Moderate.
228B:							
Nappanee--------	>60	---	---	---	Moderate----	High--------	Low.
232A:							
Ashkum----------	>60	---	---	---	High--------	High--------	Moderate.
290A:							
Warsaw----------	>60	---	---	---	Moderate----	Low---------	Moderate.
290B:							
Warsaw----------	>60	---	---	---	Moderate----	Low---------	Moderate.
290C2:							
Warsaw----------	>60	---	---	---	Moderate----	Low---------	Moderate.
297A:							
Ringwood--------	>60	---	---	---	Moderate----	Moderate----	Low.
297B:							
Ringwood--------	>60	---	---	---	Moderate----	Moderate----	Low.

Table 21.--Soil Features--Continued

Map symbol and soil name	Bedrock		Subsidence		Potential frost action	Risk of corrosion	
	Depth	Hardness	Initial	Total		Uncoated steel	Concrete
	In		In	In			
298B:							
Beecher	>60	---	---	---	High	High	High.
310B:							
McHenry	>60	---	---	---	Moderate	High	Moderate.
318A:							
Lorenzo	>60	---	---	---	Low	Moderate	Moderate.
318B:							
Lorenzo	>60	---	---	---	Low	Moderate	Moderate.
318C2:							
Lorenzo	>60	---	---	---	Low	Moderate	Moderate.
318D2:							
Lorenzo	>60	---	---	---	Low	Moderate	Moderate.
323B:							
Casco	>60	---	---	---	Low	Moderate	Low.
323C2:							
Casco	>60	---	---	---	Low	Moderate	Low.
323C3:							
Casco	>60	---	---	---	Low	Moderate	Low.
323D2:							
Casco	>60	---	---	---	Low	Moderate	Low.
323D3:							
Casco	>60	---	---	---	Low	Moderate	Low.
325A:							
Dresden	>60	---	---	---	Moderate	Moderate	Low.
325B:							
Dresden	>60	---	---	---	Moderate	Moderate	Low.
327A:							
Fox	>60	---	---	---	Moderate	Moderate	Moderate.
327B:							
Fox	>60	---	---	---	Moderate	Moderate	Moderate.
327C2:							
Fox	>60	---	---	---	Moderate	Moderate	Moderate.
327D2:							
Fox	>60	---	---	---	Moderate	Moderate	Moderate.
329A:							
Will	>60	---	---	---	High	High	Moderate.
330A:							
Peotone	>60	---	---	---	High	High	Moderate.
343A:							
Kane	>60	---	---	---	High	High	Moderate.
344A:							
Harvard	>60	---	---	---	High	Moderate	Moderate.

Table 21.--Soil Features--Continued

Map symbol and soil name	Bedrock: Depth	Bedrock: Hardness	Subsidence: Initial	Subsidence: Total	Potential frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
	In		In	In			
344B:							
Harvard	>60	---	---	---	High	Moderate	Moderate.
361B:							
Kidder	>60	---	---	---	Moderate	Moderate	Low.
361C:							
Kidder	>60	---	---	---	Moderate	Moderate	Low.
361C2:							
Kidder	>60	---	---	---	Moderate	Moderate	Low.
361C3:							
Kidder	>60	---	---	---	Moderate	Moderate	Low.
361D2:							
Kidder	>60	---	---	---	Moderate	Moderate	Low.
361D3:							
Kidder	>60	---	---	---	Moderate	Moderate	Low.
361E:							
Kidder	>60	---	---	---	Moderate	Moderate	Low.
361E2:							
Kidder	>60	---	---	---	Moderate	Moderate	Low.
361F:							
Kidder	>60	---	---	---	Moderate	Moderate	Low.
363B:							
Griswold	>60	---	---	---	Moderate	Low	Low.
363C2:							
Griswold	>60	---	---	---	Moderate	Low	Low.
363D2:							
Griswold	>60	---	---	---	Moderate	Low	Low.
369A:							
Waupecan	>60	---	---	---	High	Moderate	Moderate.
369B:							
Waupecan	>60	---	---	---	High	Moderate	Moderate.
379A:							
Dakota	>60	---	---	---	Moderate	Low	Moderate.
379B:							
Dakota	>60	---	---	---	Moderate	Low	Moderate.
488A:							
Hooppole	>60	---	---	---	High	High	Low.
503B:							
Rockton	20-40	Hard	---	---	Moderate	Low	Low.
512A:							
Danabrook	>60	---	---	---	High	High	Moderate.
512B:							
Danabrook	>60	---	---	---	High	High	Moderate.

Table 21.--Soil Features--Continued

Map symbol and soil name	Bedrock: Depth	Bedrock: Hardness	Subsidence: Initial	Subsidence: Total	Potential frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
	In		In	In			
523A:							
Dunham	>60	---	---	---	High	High	Moderate.
526A:							
Grundelein	>60	---	---	---	High	High	Moderate.
527B:							
Kidami	>60	---	---	---	Moderate	Moderate	Moderate.
527C:							
Kidami	>60	---	---	---	Moderate	Moderate	Moderate.
527C2:							
Kidami	>60	---	---	---	Moderate	Moderate	Moderate.
527D:							
Kidami	>60	---	---	---	Moderate	Moderate	Moderate.
527D2:							
Kidami	>60	---	---	---	Moderate	Moderate	Moderate.
527D3:							
Kidami	>60	---	---	---	Moderate	Moderate	Moderate.
528A:							
Lahoguess	>60	---	---	---	Moderate	High	Moderate.
529A:							
Selmass	>60	---	---	---	High	High	Moderate.
530B:							
Ozaukee	>60	---	---	---	Moderate	High	Low.
530C2:							
Ozaukee	>60	---	---	---	Moderate	High	Low.
530C3:							
Ozaukee	>60	---	---	---	Moderate	High	Low.
530D2:							
Ozaukee	>60	---	---	---	Moderate	High	Low.
530D3:							
Ozaukee	>60	---	---	---	Moderate	High	Low.
530E:							
Ozaukee	>60	---	---	---	Moderate	High	Low.
543B:							
Piscasaw	>60	---	---	---	High	Moderate	Moderate.
544A:							
Torox	>60	---	---	---	High	High	Moderate.
545A:							
Windere	>60	---	---	---	High	High	Moderate.
545B:							
Windere	>60	---	---	---	High	High	Moderate.
557A:							
Millstream	>60	---	---	---	High	High	Moderate.

Table 21.--Soil Features--Continued

Map symbol and soil name	Bedrock		Subsidence		Potential frost action	Risk of corrosion	
	Depth	Hardness	Initial	Total		Uncoated steel	Concrete
	In		In	In			
570A:							
Martinsville	>60	---	---	---	Moderate	Moderate	Moderate.
570B:							
Martinsville	>60	---	---	---	Moderate	Moderate	Moderate.
570C2:							
Martinsville	>60	---	---	---	Moderate	Moderate	Moderate.
618E:							
Senachwine	>60	---	---	---	Moderate	Moderate	Moderate.
618F:							
Senachwine	>60	---	---	---	Moderate	Moderate	Moderate.
624B:							
Caprell	>60	---	---	---	Moderate	Moderate	Moderate.
624C2:							
Caprell	>60	---	---	---	Moderate	Moderate	Moderate.
624D2:							
Caprell	>60	---	---	---	Moderate	Moderate	Moderate.
624E:							
Caprell	>60	---	---	---	Moderate	Moderate	Moderate.
625A:							
Geryune	>60	---	---	---	High	High	Moderate.
625B:							
Geryune	>60	---	---	---	High	High	Moderate.
626A:							
Kish	>60	---	---	---	High	High	Low.
635A:							
Lismod	>60	---	---	---	High	High	Moderate.
635B:							
Lismod	>60	---	---	---	High	High	Moderate.
636B:							
Parmod	>60	---	---	---	Moderate	High	Moderate.
656B:							
Octagon	>60	---	---	---	Moderate	High	Moderate.
656C2:							
Octagon	>60	---	---	---	Moderate	High	Moderate.
791A:							
Rush	>60	---	---	---	High	Moderate	Moderate.
791B:							
Rush	>60	---	---	---	High	Moderate	Moderate.
791C2:							
Rush	>60	---	---	---	High	Moderate	Moderate.
792A:							
Bowes	>60	---	---	---	High	Moderate	Moderate.

Table 21.--Soil Features--Continued

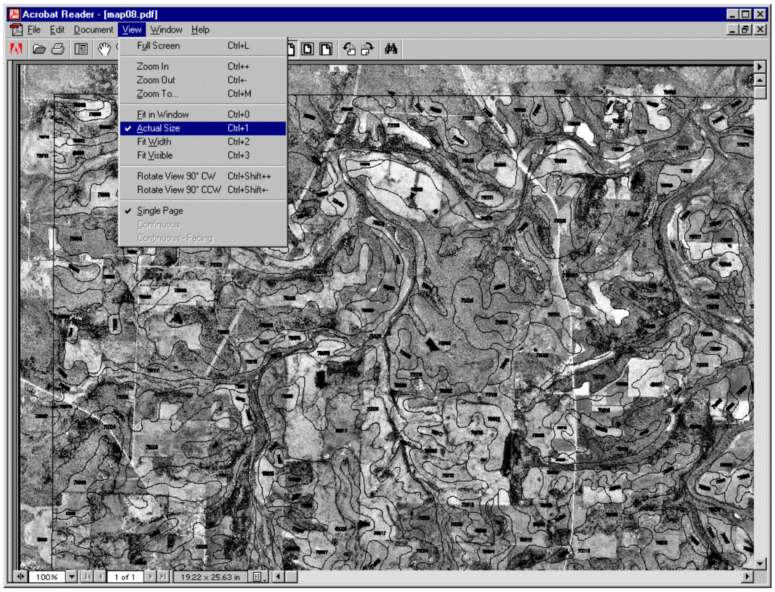
Map symbol and soil name	Bedrock: Depth	Bedrock: Hardness	Subsidence: Initial	Subsidence: Total	Potential frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
	In		In	In			
792B:							
Bowes	>60	---	---	---	High	Moderate	Moderate.
802B:							
Orthents, loamy	>60	---	---	---	Moderate	Moderate	Moderate.
865:							
Pits, gravel.							
969E2:							
Casco	>60	---	---	---	Low	Moderate	Low.
Rodman	>60	---	---	---	Low	Low	Low.
969F:							
Casco	>60	---	---	---	Low	Moderate	Low.
Rodman	>60	---	---	---	Low	Low	Low.
1067A:							
Harpster	>60	---	---	---	High	High	Low.
1082A:							
Millington	>60	---	---	---	High	High	Low.
1100A:							
Palms	>60	---	4-15	25-32	High	High	Moderate.
1103A:							
Houghton	>60	---	6-18	55-60	High	High	Moderate.
1153A:							
Pella	>60	---	---	---	High	High	Low.
1206A:							
Thorp	>60	---	---	---	High	High	Moderate.
1210A:							
Lena	>60	---	---	50-90	High	High	Low.
1330A:							
Peotone	>60	---	---	---	High	High	Moderate.
1488A:							
Hooppole	>60	---	---	---	High	High	Low.
1529A:							
Selmass	>60	---	---	---	High	High	Moderate.
1626A:							
Kish	>60	---	---	---	High	High	Low.
1776A:							
Comfrey	>60	---	---	---	High	High	Low.
4103A:							
Houghton	>60	---	---	40-60	High	High	Low.
8082A:							
Millington	>60	---	---	---	High	High	Low.

Table 21.--Soil Features--Continued

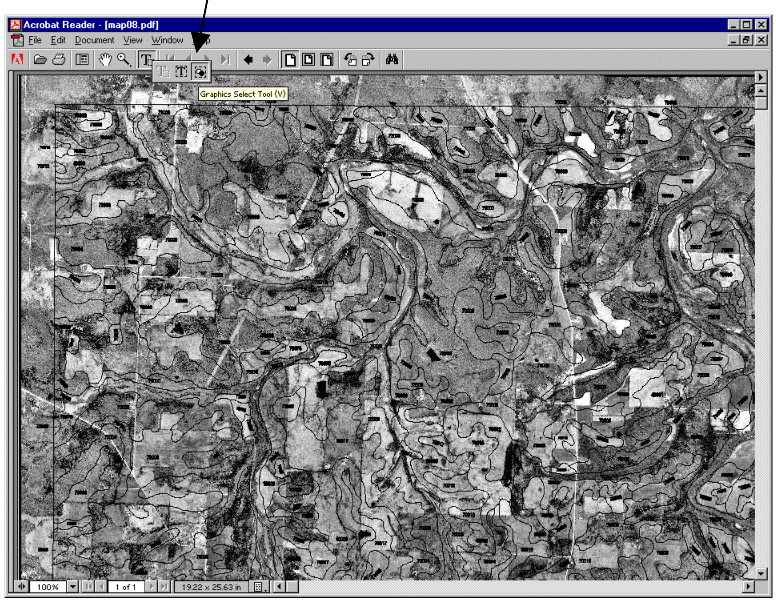
Map symbol and soil name	Bedrock		Subsidence		Potential frost action	Risk of corrosion	
	Depth	Hardness	Initial	Total		Uncoated steel	Concrete
	In		In	In			
8776A:							
Comfrey---------	>60	---	---	---	High--------	High--------	Low.

Printing Soil Survey Maps

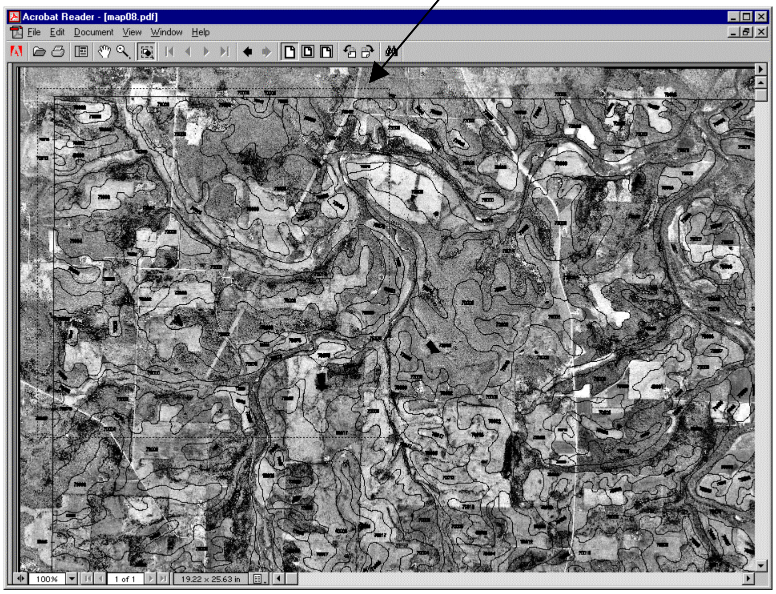
The soil survey maps were made at a scale of 1:12000 and were designed to be used at that scale. To print the maps at 1:12000 scale, set the view to Actual Size from the View pull down menu.



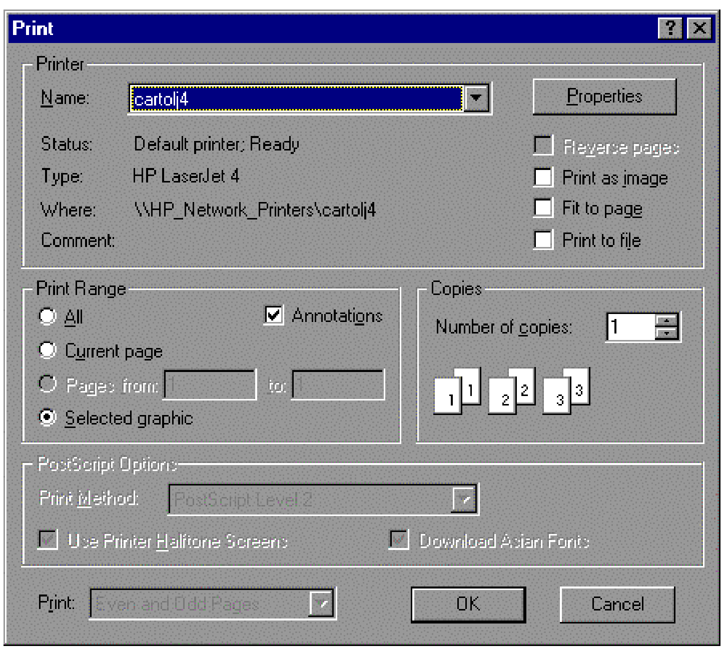
Using the pan tool, go to the area you would like to print. Select the Graphic Selection Tool by holding down the Text Selection Tool button and clicking on the Graphic Selection Tool button.



Then using the Graphic Selection Tool drag a box around the area you would like to print. Note dashed lines forming a box around area to print.



Select File Print. The Print Range will be set to Selected graphic. Click OK and the map will be sent to the printer.



NRCS SOILS 37A
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U.S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CONVENTIONAL AND SPECIAL SYMBOLS LEGEND

DESCRIPTION	SYMBOL

CULTURAL FEATURES

BOUNDARIES

- • National, state, or province
- • County or parish
- Minor civil division
- Reservation, (national forest or park, state forest or park)
- Land grant
- Limit of soil survey (label) and/or denied access areas
- • Field sheet matchline & neatline
- Previously published survey

OTHER BOUNDARY (label)

- Airport, airfield — Davis airstrip
- • Cemetery — St Johns Cemetery
- City / county Park — Central Park

STATE COORDINATE TICK

• LAND DIVISION CORNERS (section and land grants)

• GEOGRAPHIC COORDINATE TICK

TRANSPORTATION

- Divided roads
- Other roads
- # Trails

ROAD EMBLEMS & DESIGNATIONS

- • Interstate — 79; 79 345
- • Federal — 410; 410 224
- • State — 52; 52 347
- County, farm, or ranch — 376

RAILROAD

POWER TRANSMISSION LINE (normally not shown)

PIPELINE (normally not shown)

FENCE (normally not shown)

LEVEES

- Without road
- With road
- With railroad
- ++Single side slope (showing actual feature location)

DAMS

- Medium or small — W

LANDFORM FEATURES

- Prominent Hill or Peak
- Soil Sample Site — S

* Cultural features for use in Illinois

DESCRIPTION	SYMBOL

CULTURAL FEATURES (cont.)

MISCELLANEOUS CULTURAL FEATURES

- Farmland, house (omit in urban areas)
- Church
- School
- Other Religion (label) — Mt Carmel
- Located object (label) — Ranger Station
- Tank (label) — Petroleum
- Lookout Tower
- Oil and / or Natural Gas Wells
- Windmill
- Lighthouse

HYDROGRAPHIC FEATURES

STREAMS

- Perennial, double line
- Perennial, single line
- Intermittent
- Drainage end

DRAINAGE AND IRRIGATION

- Double line canal (label) — CANAL
- Perennial drainage and/or irrigation ditch
- Intermittent drainage and/or irrigation ditch

SMALL LAKES, PONDS, AND RESERVOIRS

- Perennial water
- Miscellaneous water
- Flood pool line — FLOOD POOL LINE

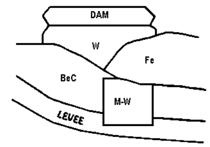
MISCELLANEOUS WATER FEATURES

- Spring
- Well, artesian
- Well, irrigation

DESCRIPTION	SYMBOL

SPECIAL SYMBOLS FOR SOIL SURVEY AND SSURGO

SOIL DELINEATIONS AND SYMBOLS



LANDFORM FEATURES

ESCARPMENTS
- Bedrock
- Other than bedrock

SHORT STEEP SLOPE

GULLY

DEPRESSION, closed

SINKHOLE

EXCAVATIONS

PITS
- Borrow pit
- Gravel pit
- Mine or quarry

LANDFILL

MISCELLANEOUS SURFACE FEATURES

- Blowout
- Clay spot
- Gravelly spot
- Lava flow
- Marsh or swamp
- Rock outcrop (includes sandstone and shale)
- Saline spot
- Sandy spot
- Severely eroded spot
- Slide or slip
- Sodic spot
- Spoil area
- Stony spot
- Very stony spot
- Wet spot

RECOMMENDED AD HOC SOIL SYMBOLS

	SYMBOL_ID			SYMBOL_ID	
	1			23	
	2			24	
	3			25	
	4		Gray spot	26 GSP	
	5			27	
	6			28	
	7		Calcareous spot	29 CSP	
	8		Muck spot	30 MUC	
	9			31	
	10			32	
	11			33	
Dumps	12 DMP			34	
	13		Mine subsided Area	35 MSA	
	14			36	
Oil brine spot	15 OBS			37	
	16			38	
	17			39	
	18		Glacial Till spot	40 GLA	
	19			41	
Disturbed soil spot	20 DSS			42	
	21			43	
	22			44	

Descriptions of Special Features

Name	Description	Label
Blowout	A small saucer-, cup-, or trough-shaped hollow or depression formed by wind erosion on a preexisting sand deposit. Typically 0.2 acre to 2.0 acres.	BLO
Borrow pit	An open excavation from which soil and underlying material have been removed, usually for construction purposes. Typically 0.2 acre to 2.0 acres.	BPI
Calcareous spot	An area in which the soil contains carbonates in the surface layer. The surface layer of the named soils in the surrounding map unit is noncalcareous. Typically 0.5 acre to 2.0 acres.	CSP
Clay spot	A spot where the surface layer is silty clay or clay in areas where the surface layer of the soils in the surrounding map unit is sandy loam, loam, silt loam, or coarser. Typically 0.2 acre to 2.0 acres.	CLA
Depression, closed	A shallow, saucer-shaped area that is slightly lower on the landscape than the surrounding area and that does not have a natural outlet for surface drainage. Typically 0.2 acre to 2.0 acres.	DEP
Disturbed soil spot	An area in which the soil has been removed and materials redeposited as a result of human activity. Typically 0.25 acre to 2.0 acres.	DSS
Dumps	Areas of nonsoil material that support little or no vegetation. Typically 0.5 acre to 2.0 acres.	DMP
Escarpment, bedrock	A relatively continuous and steep slope or cliff, produced by erosion or faulting, that breaks the general continuity of more gently sloping land surfaces. Exposed material is hard or soft bedrock.	ESB
Escarpment, nonbedrock	A relatively continuous and steep slope or cliff, generally produced by erosion but in some places produced by faulting, that breaks the continuity of more gently sloping land surfaces. Exposed earthy material is nonsoil or very shallow soil.	ESO
Glacial till spot	An exposure of glacial till at the surface of the earth. Typically 0.25 acre to 2.0 acres.	GLA
Gravel pit	An open excavation from which soil and underlying material have been removed and used, without crushing, as a source of sand or gravel. Typically 0.2 acre to 2.0 acres.	GPI
Gravelly spot	A spot where the surface layer has more than 35 percent, by volume, rock fragments that are mostly less than 3 inches in diameter in an area that has less than 15 percent rock fragments. Typically 0.2 acre to 2.0 acres.	GRA

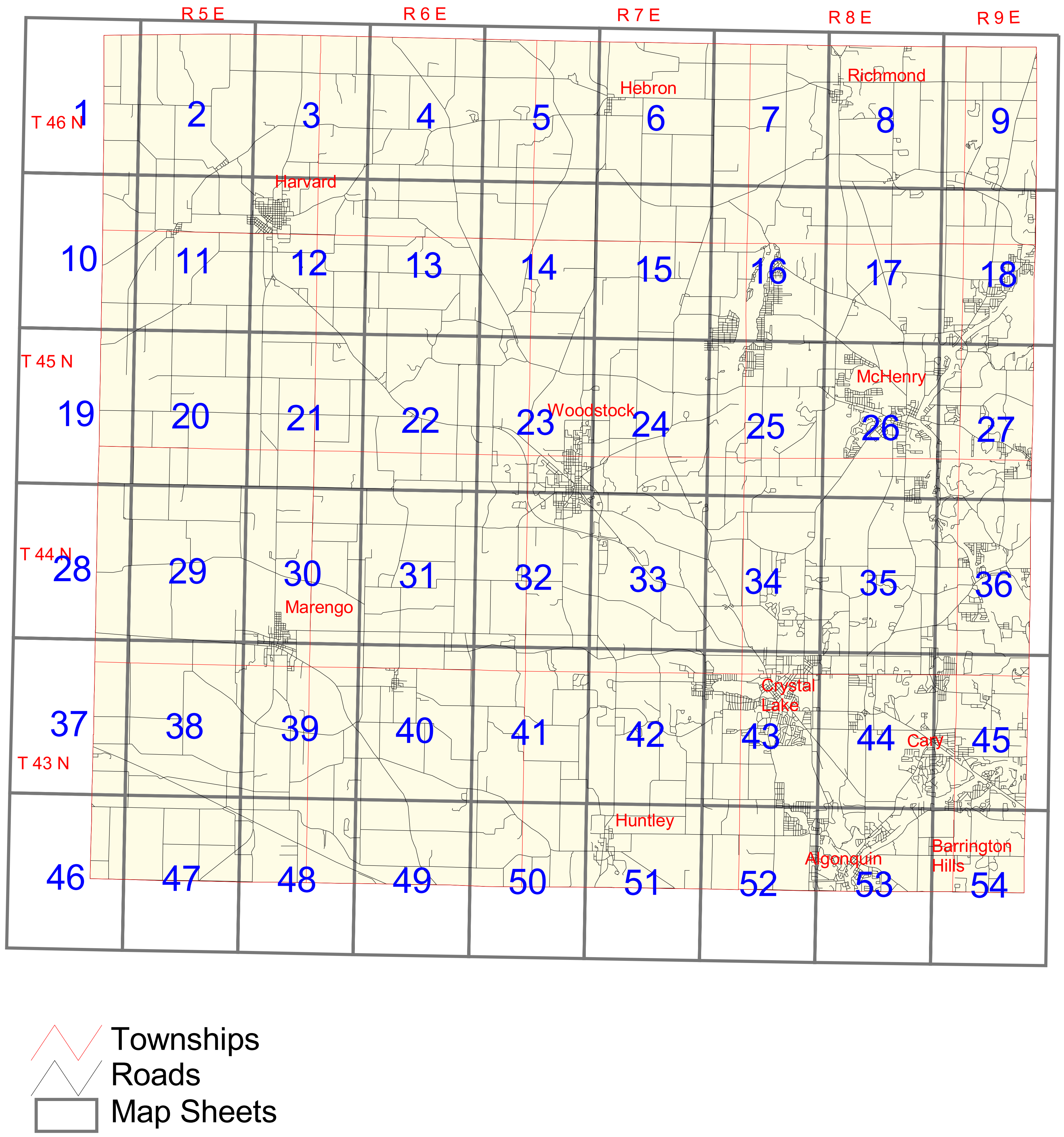
Name	Description	Label
Gray spot	A spot in which the surface layer is gray in areas where the subsurface layer of the named soils in the surrounding map unit are darker. Typically 0.25 acre to 2.0 acres.	GSP
Gully	A small channel with steep sides cut by running water through which water ordinarily runs only after a rain or after melting of snow or ice. It generally is an obstacle to wheeled vehicles and is too deep to be obliterated by ordinary tillage.	GUL
Iron bog	An accumulation of iron in the form of nodules, concretions, or soft masses on the surface or near the surface of soils. Typically 0.2 acre to 2.0 acres.	BFE
Landfill	An area of accumulated waste products of human habitation, either above or below natural ground level. Typically 0.2 acre to 2.0 acres.	LDF
Levee	An embankment that confines or controls water, especially one built along the banks of a river to prevent overflow onto lowlands.	LVS
Marsh or swamp	A water-saturated, very poorly drained area that is intermittently or permanently covered by water. Sedges, cattails, and rushes are the dominant vegetation in marshes, and trees or shrubs are the dominant vegetation in swamps. Typically 0.2 acre to 2.0 acres.	MAR
Mine or quarry	An open excavation from which soil and underlying material have been removed and in which bedrock is exposed. Also denotes surface openings to underground mines. Typically 0.2 acre to 2.0 acres.	MPI
Mine subsided area	An area that is lower than the soils in the surrounding map unit because of subsurface coal mining. Typically 0.25 acre to 3.0 acres.	MSA
Miscellaneous water	A small, constructed body of water that is used for industrial, sanitary, or mining applications and that contains water most of the year. Typically 0.2 acre to 2.0 acres.	MIS
Muck spot	An area that occurs within an area of poorly drained or very poorly drained soil and that has a histic epipedon or an organic surface layer. The symbol is used only in map units consisting of mineral soil. Typically 0.2 acre to 2.0 acres.	MUC
Oil brine spot	An area of soil that has been severely damaged by the accumulation of oil brine, with or without liquid oily wastes. The area is typically barren but may have a vegetative cover of salt-tolerant plants. Typically 0.2 acre to 2.0 acres.	OBS
Perennial water	A small, natural or constructed lake, pond, or pit that contains water most of the year. Typically 0.2 acre to 2.0 acres.	WAT

Name	Description	Label
Rock outcrop	An exposure of bedrock at the surface of the earth. Not used where the named soils of the surrounding map unit are shallow over bedrock or where “Rock outcrop” is a named component of the map unit. Typically 0.2 acre to 2.0 acres.	ROC
Saline spot	An area where the surface layer has an electrical conductivity of 8 mmhos/cm-l more than the surface layer of the named soils in the surrounding map unit. The surface layer of the surrounding soils has an electrical conductivity of 2 mmhos/cm-l or less. Typically 0.2 acre to 2.0 acres.	SAL
Sandy spot	A spot where the surface layer is loamy fine sand or coarser in areas where the surface layer of the named soils in the surrounding map unit is very fine sandy loam or finer. Typically 0.2 acre to 2.0 acres.	SAN
Severely eroded spot	An area where, on the average, 75 percent or more of the original surface layer has been lost because of accelerated erosion. Not used in map units in which “severely eroded,” “very severely eroded,” or “gullied” is part of the map unit name. Typically 0.2 acre to 2.0 acres.	ERO
Short steep slope	A narrow area of soil having slopes that are at least two slope classes steeper than the slope class of the surrounding map unit.	SLP
Sinkhole	A closed depression formed either by solution of the surficial rock or by collapse of underlying caves. Typically 0.2 acre to 2.0 acres.	SNK
Slide or slip	A prominent landform scar or ridge caused by fairly recent mass movement or descent of earthy material resulting from failure of earth or rock under shear stress along one or several surfaces. Typically 0.2 acre to 2.0 acres.	SLI
Sodic spot	An area where the surface layer has a sodium adsorption ratio that is at least 10 more than that of the surface layer of the named soils in the surrounding map unit. The surface layer of the surrounding soils has a sodium adsorption ratio of 5 or less. Typically 0.2 acre to 2.0 acres.	SOD
Spoil area	A pile of earthy materials, either smoothed or uneven, resulting from human activity. Typically 0.2 acre to 2.0 acres.	SPO
Stony spot	A spot where 0.01 to 0.1 percent of the surface cover is rock fragments that are more than 10 inches in diameter in areas where the surrounding soil has no surface stones. Typically 0.2 acre to 2.0 acres.	STN
Unclassified water	A small, natural or manmade lake, pond, or pit that contains water, of an unspecified nature, most of the year. Typically 0.2 acre to 2.0 acres.	UWT

Name	Description	Label
Very stony spot	A spot where 0.1 to 3.0 percent of the surface cover is rock fragments that are more than 10 inches in diameter in areas where the surface cover of the surrounding soil is less than 0.01 percent stones. Typically 0.2 acre to 2.0 acres.	STV
Wet depression	A shallow, concave area within an area of poorly drained or very poorly drained soils in which water is ponded for intermittent periods. The concave area is saturated for appreciably longer periods of time than the surrounding soil. Typically 0.2 acre to 2.0 acres.	WDP
Wet spot	A somewhat poorly drained to very poorly drained area that is at least two drainage classes wetter than the named soils in the surrounding map unit. Typically 0.2 acres to 2.0 acres.	WET

McHenry County, Illinois
Index to Map Sheets

Click on Map sheet number to open map



UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

MC HENRY COUNTY, ILLINOIS
CAPRON NW QUADRANGLE
SHEET NUMBER 1 OF 54

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988 aerial photography.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

1	2	3
4		5
6	7	8

1 CLINTON SE, WISCONSIN
2 SHARON SW, WISCONSIN
3 SHARON SE, WISCONSIN
4 BELVIDERE NE NE
5 CAPRON NE (SHEET 2)
6 BELVIDERE NE SE
7 CAPRON SW (SHEET 10)
8 CAPRON SE (SHEET 11)

INDEX TO ADJOINING 3.75 MAPS

CAPRON NW, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 1 OF 54

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

MC HENRY COUNTY, ILLINOIS
CAPRON NE QUADRANGLE
SHEET NUMBER 2 OF 54

88°41′15″ 42°30′00″ — 88°37′30″ 42°30′00″

42°26′15″ 88°41′15″ — 42°26′15″ 88°37′30″

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NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES: 0.5 — 0 — 0.5

FEET: 500 — 0 — 500 — 1000 — 1500 — 2000 — 2500 — 3000 — 3500

KILOMETERS: 0.5 — 0 — 0.5

1	2	3
4		5
6	7	8

1 SHARON SW, WISCONSIN
2 SHARON SE, WISCONSIN
3 WALWORTH SW, WISCONSIN
4 CAPRON NW (SHEET 1)
5 HARVARD NW (SHEET 3)
6 CAPRON SW (SHEET 10)
7 CAPRON SE (SHEET 11)
8 HARVARD SW (SHEET 12)

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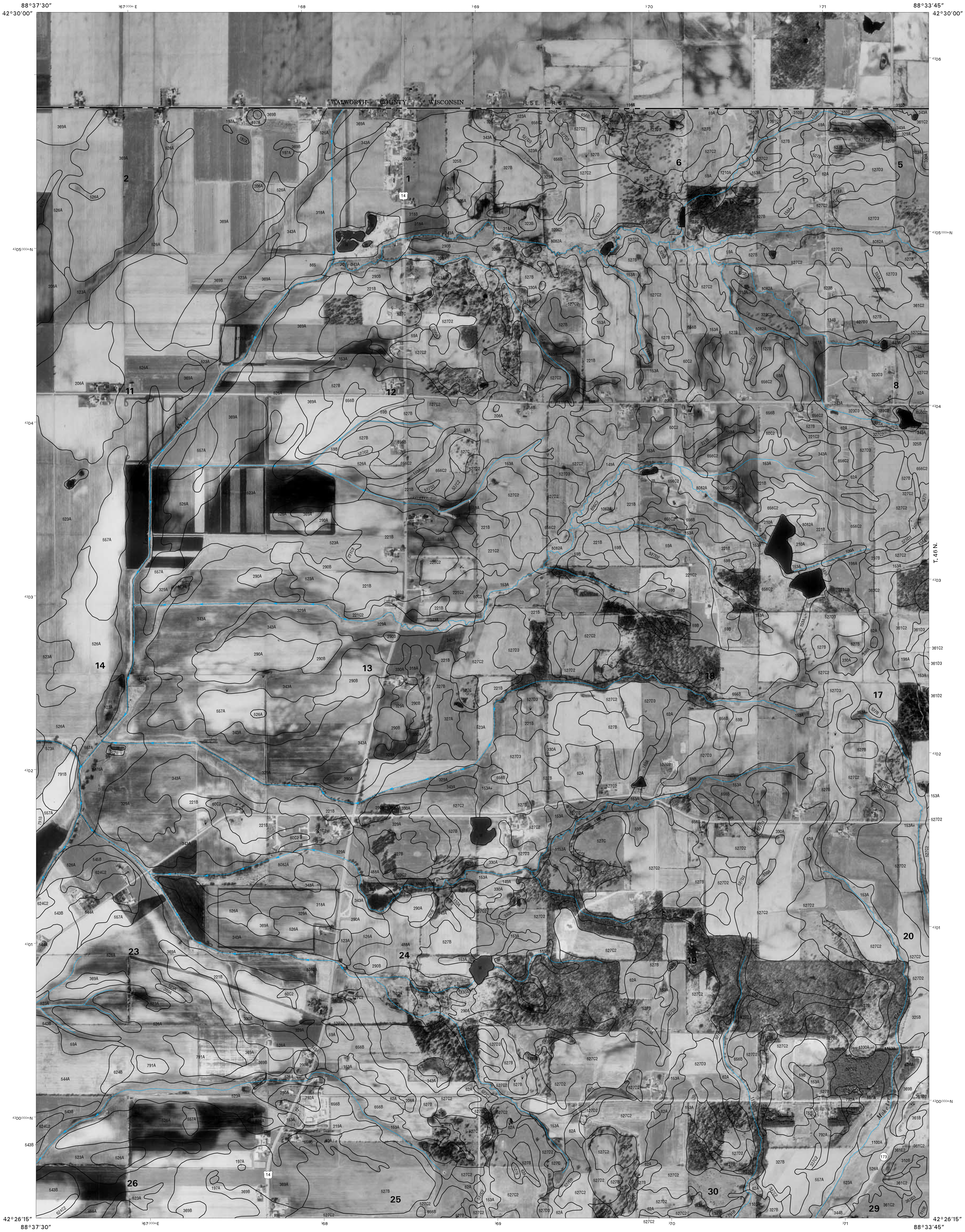
CAPRON NE, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 2 OF 54



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NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

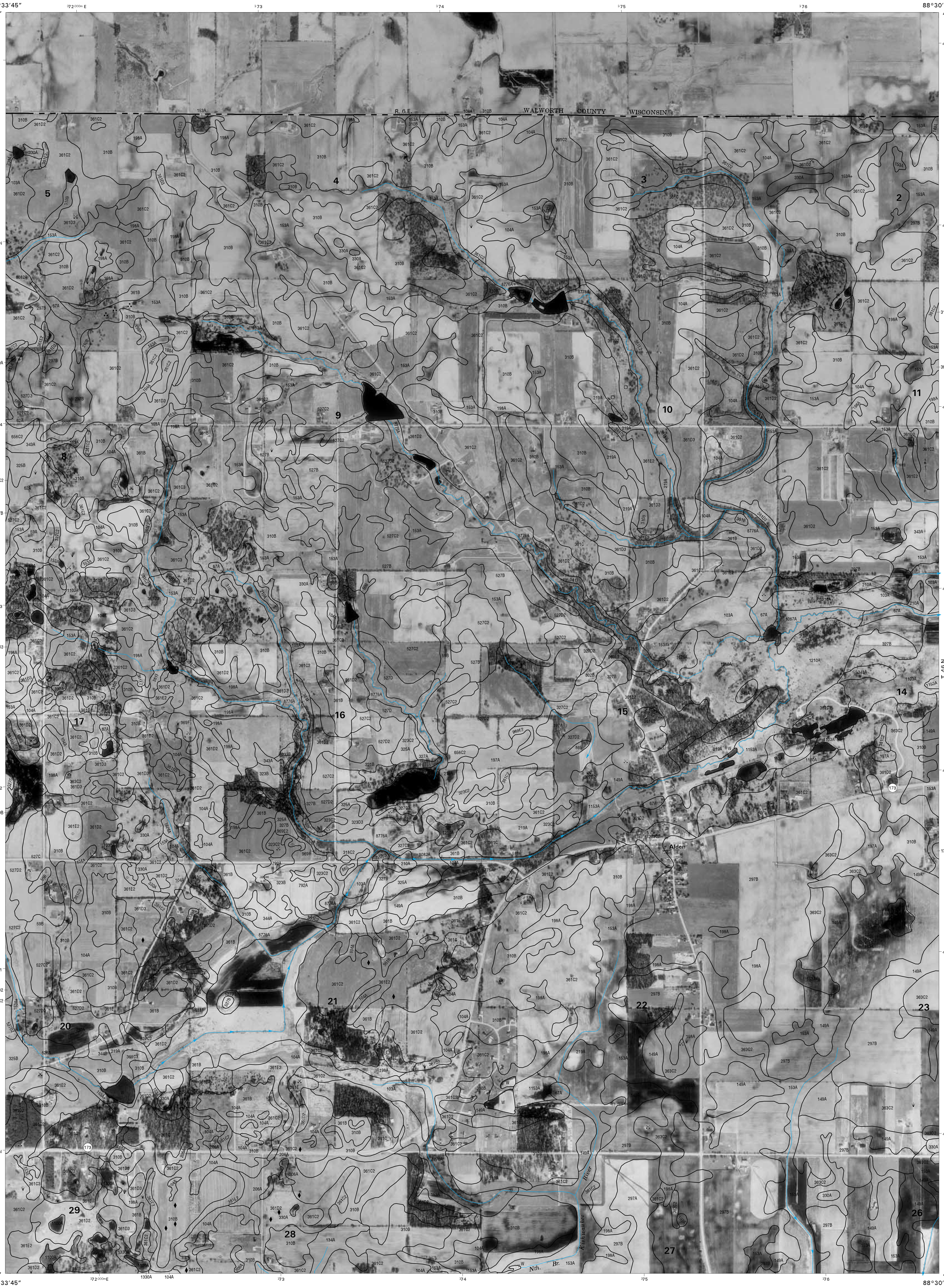
INDEX TO ADJOINING 3.75 MAPS

1 SHARON SE, WISCONSIN
2 WALWORTH SW, WISCONSIN
3 WALWORTH SE, WISCONSIN
4 CAPRON NE (SHEET 2)
5 HARVARD NE (SHEET 4)
6 CAPRON SE (SHEET 11)
7 HARVARD SW (SHEET 12)
8 HARVARD SE (SHEET 13)

HARVARD NW, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 3 OF 54

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

MC HENRY COUNTY, ILLINOIS
HARVARD NE QUADRANGLE
SHEET NUMBER 4 OF 54



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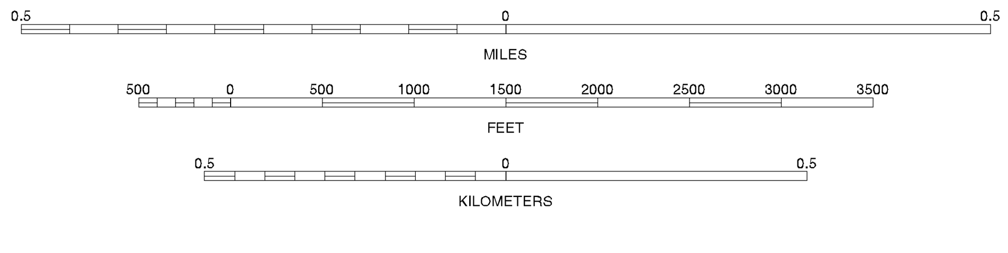
SCALE 1:12000



1	2	3
4		5
6	7	8

1 WALWORTH SW, WISCONSIN
2 WALWORTH SE, WISCONSIN
3 LAKE GENEVA, WISCONSIN
4 HARVARD NW (SHEET 3)
5 HEBRON NW (SHEET 5)
6 HARVARD SW (SHEET 12)
7 HARVARD SE (SHEET 13)
8 HEBRON SW (SHEET 14)

INDEX TO ADJOINING 3.75 MAPS

HARVARD NE, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 4 OF 54

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

MC HENRY COUNTY, ILLINOIS
HEBRON NW QUADRANGLE
SHEET NUMBER 5 OF 54

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NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

1	2	3
4		5
6	7	8

1 WALWORTH SE, WISCONSIN
2 LAKE GENEVA SW, WISCONSIN
3 LAKE GENEVA SE, WISCONSIN
4 HARVARD NE (SHEET 4)
5 HEBRON NE (SHEET 6)
6 HARVARD SE (SHEET 13)
7 HEBRON SW (SHEET 14)
8 HEBRON SE (SHEET 15)

INDEX TO ADJOINING 3.75 MAPS

HEBRON NW, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 5 OF 54

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NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 — 0 — 0.5 MILES

500 — 0 — 500 — 1000 — 1500 — 2000 — 2500 — 3000 — 3500 FEET

0.5 — 0 — 0.5 KILOMETERS

1	2	3
4		5
6	7	8

1 LAKE GENEVA SW, WISCONSIN
2 LAKE GENEVA SE, WISCONSIN
3 GENOA CITY SW, WISCONSIN
4 HEBRON NW (SHEET 5)
5 RICHMOND NW (SHEET 7)
6 HEBRON SW (SHEET 14)
7 HEBRON SE (SHEET 15)
8 RICHMOND SW (SHEET 16)

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HEBRON NE, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 6 OF 54

UNITED STATES
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MC HENRY COUNTY, ILLINOIS
RICHMOND NW QUADRANGLE
SHEET NUMBER 7 OF 54

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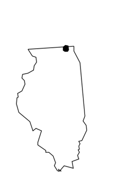
NORTH



QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

1	2	3
4		5
6	7	8

1 LAKE GENEVA SE, WISCONSIN
2 GENOA CITY SW, WISCONSIN
3 GENOA CITY SE, WISCONSIN
4 HEBRON NE (SHEET 6)
5 RICHMOND NE (SHEET 8)
6 HEBRON SE (SHEET 15)
7 RICHMOND SW (SHEET 16)
8 RICHMOND SE (SHEET 17)

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RICHMOND NW, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 7 OF 54

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

MC HENRY COUNTY, ILLINOIS
RICHMOND NE QUADRANGLE
SHEET NUMBER 8 OF 54

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NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

1	2	3
4		5
6	7	8

1 GENOA CITY SW, WISCONSIN
2 GENOA CITY SE, WISCONSIN
3 SILVER LAKE SW, WISCONSIN
4 RICHMOND NW (SHEET 7)
5 FOX LAKE NW (SHEET 9)
6 RICHMOND SW (SHEET 16)
7 RICHMOND SE (SHEET 17)
8 FOX LAKE SW (SHEET 18)

INDEX TO ADJOINING 3.75 MAPS

RICHMOND NE, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 8 OF 54

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

MC HENRY COUNTY, ILLINOIS
FOX LAKE NW QUADRANGLE
SHEET NUMBER 9 OF 54

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NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

1	2	3
4		5
6	7	8

1 GENOA CITY SE, WISCONSIN
2 SILVER LAKE SW, WISCONSIN
3 SILVER LAKE SE, WISCONSIN
4 RICHMOND NE (SHEET 8)
5 FOX LAKE NE
6 RICHMOND SE (SHEET 17)
7 FOX LAKE SW (SHEET 18)
8 FOX LAKE SE

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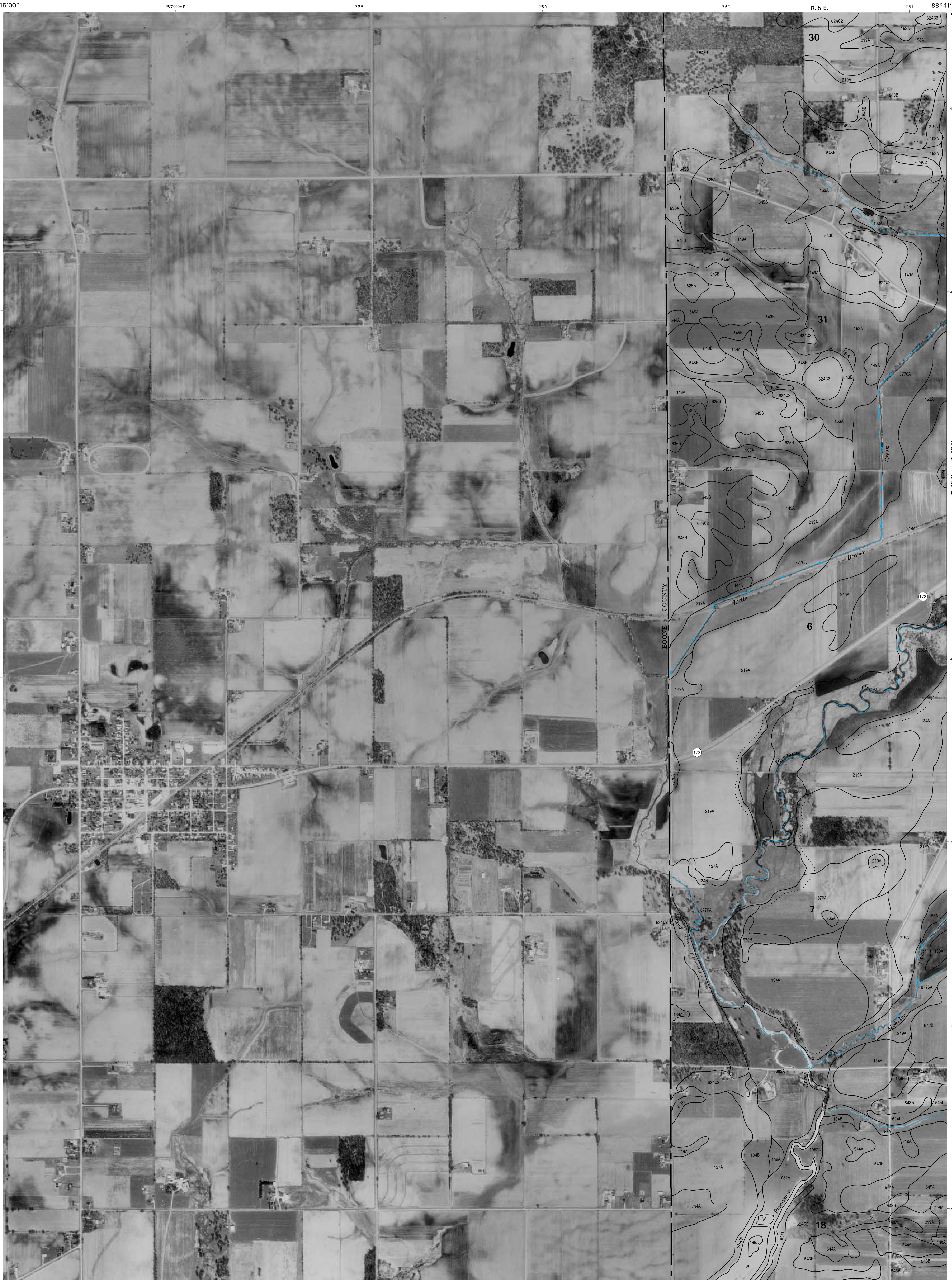
FOX LAKE NW, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 9 OF 54

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

88°45'00" 42°26'15"

88°41'15" 42°26'15"



42°22'30" 88°45'00"

42°22'30" 88°41'15"

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North American Datum of 1983 (NAD83). GRS-80 Spheroid
1000-meter ticks: Universal Transverse Mercator, zone 16.
Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

1	2	3
4		5
6	7	8

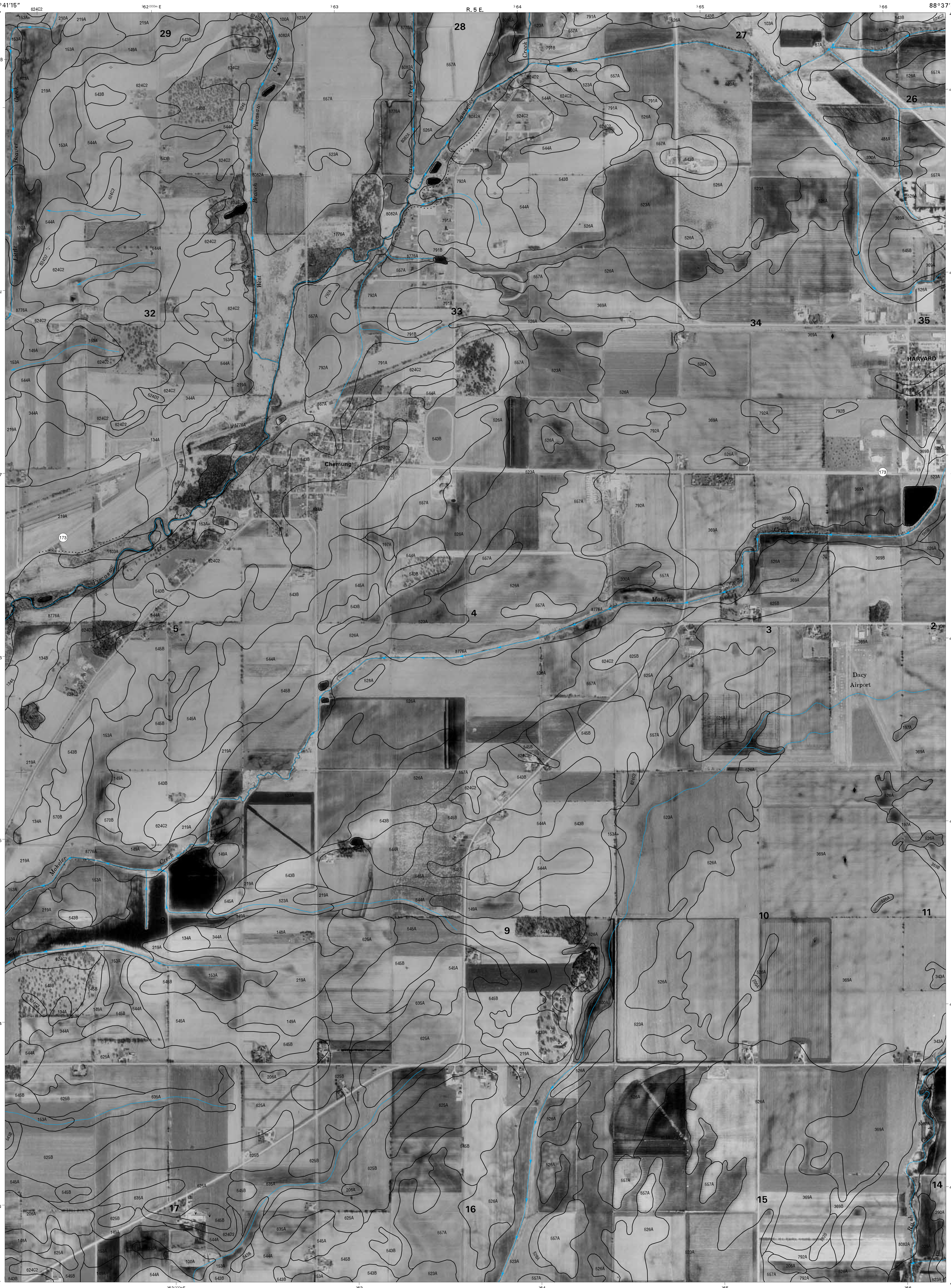
1 BELVIDERE NE NE
2 CAPRON NW (SHEET 1)
3 CAPRON NE (SHEET 2)
4 BELVIDERE NE SE
5 CAPRON SE (SHEET 11)
6 BELVIDERE NORTH NE
7 GARDEN PRAIRIE NW (SHEET 19)
8 GARDEN PRAIRIE NE (SHEET 20)

INDEX TO ADJOINING 3.75 MAPS

CAPRON SW, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 10 OF 54

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

88°41′15″ 42°26′15″ — 88°37′30″ 42°26′15″



42°22′30″ 88°41′15″ — 42°22′30″ 88°37′30″

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

1	2	3
4		5
6	7	8

1 CAPRON NW (SHEET 1)
2 CAPRON NE (SHEET 2)
3 HARVARD NW (SHEET 3)
4 CAPRON SW (SHEET 10)
5 HARVARD SW (SHEET 12)
6 GARDEN PRAIRIE NW (SHEET 19)
7 GARDEN PRAIRIE NE (SHEET 20)
8 MARENGO NORTH NW (SHEET 21)

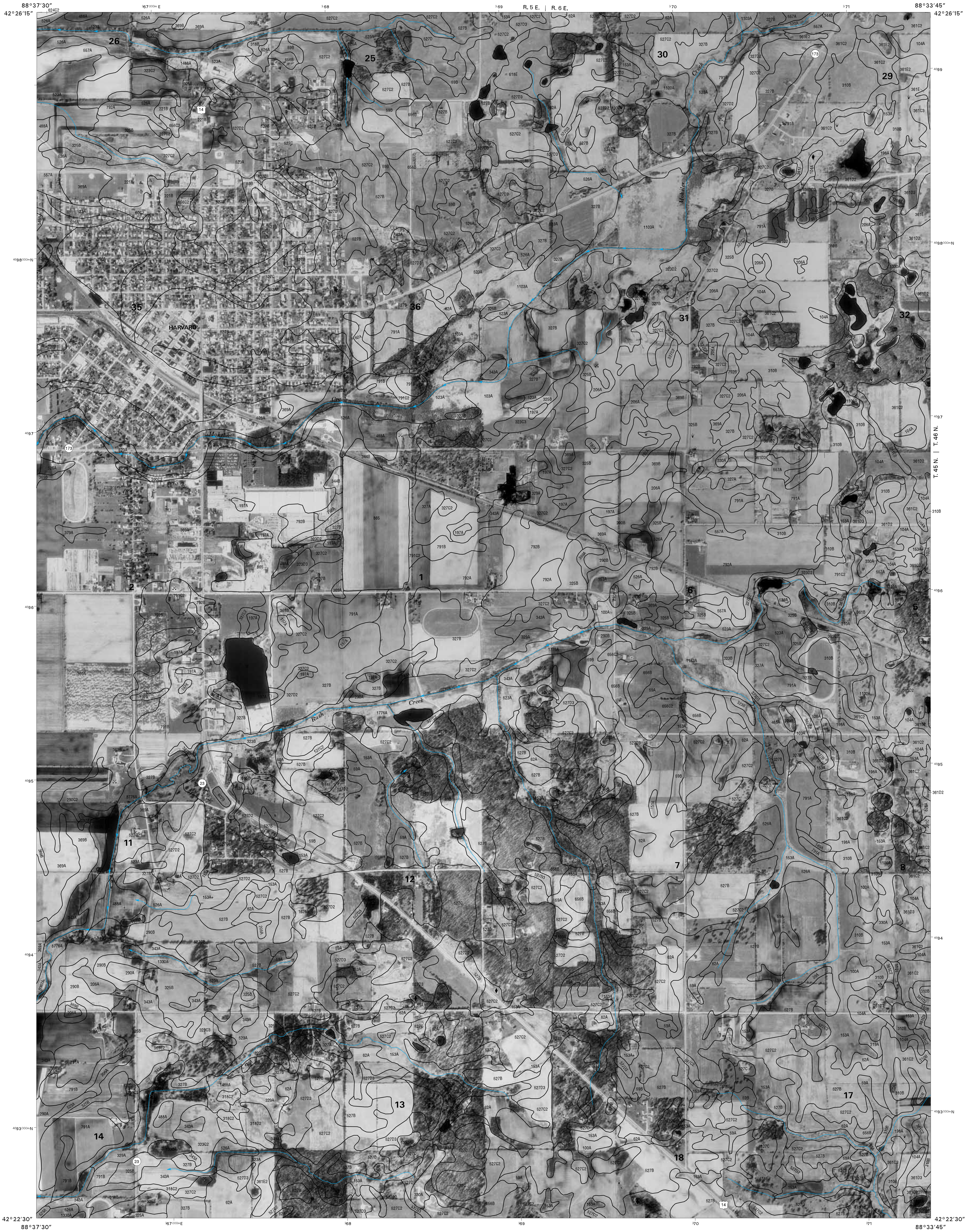
INDEX TO ADJOINING 3.75 MAPS

CAPRON SE, ILLINOIS

3.75 MINUTE SERIES
SHEET NUMBER 11 OF 54

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

MC HENRY COUNTY, ILLINOIS
HARVARD SW QUADRANGLE
SHEET NUMBER 12 OF 54



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988 aerial photography.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

1	2	3
4		5
6	7	8

1 CAPRON NE (SHEET 2)
2 HARVARD NW (SHEET 3)
3 HARVARD NE (SHEET 4)
4 CAPRON SE (SHEET 11)
5 HARVARD SE (SHEET 13)
6 GARDEN PRAIRIE NE (SHEET 20)
7 MARENGO NORTH NW (SHEET 21)
8 MARENGO NORTH NE (SHEET 22)

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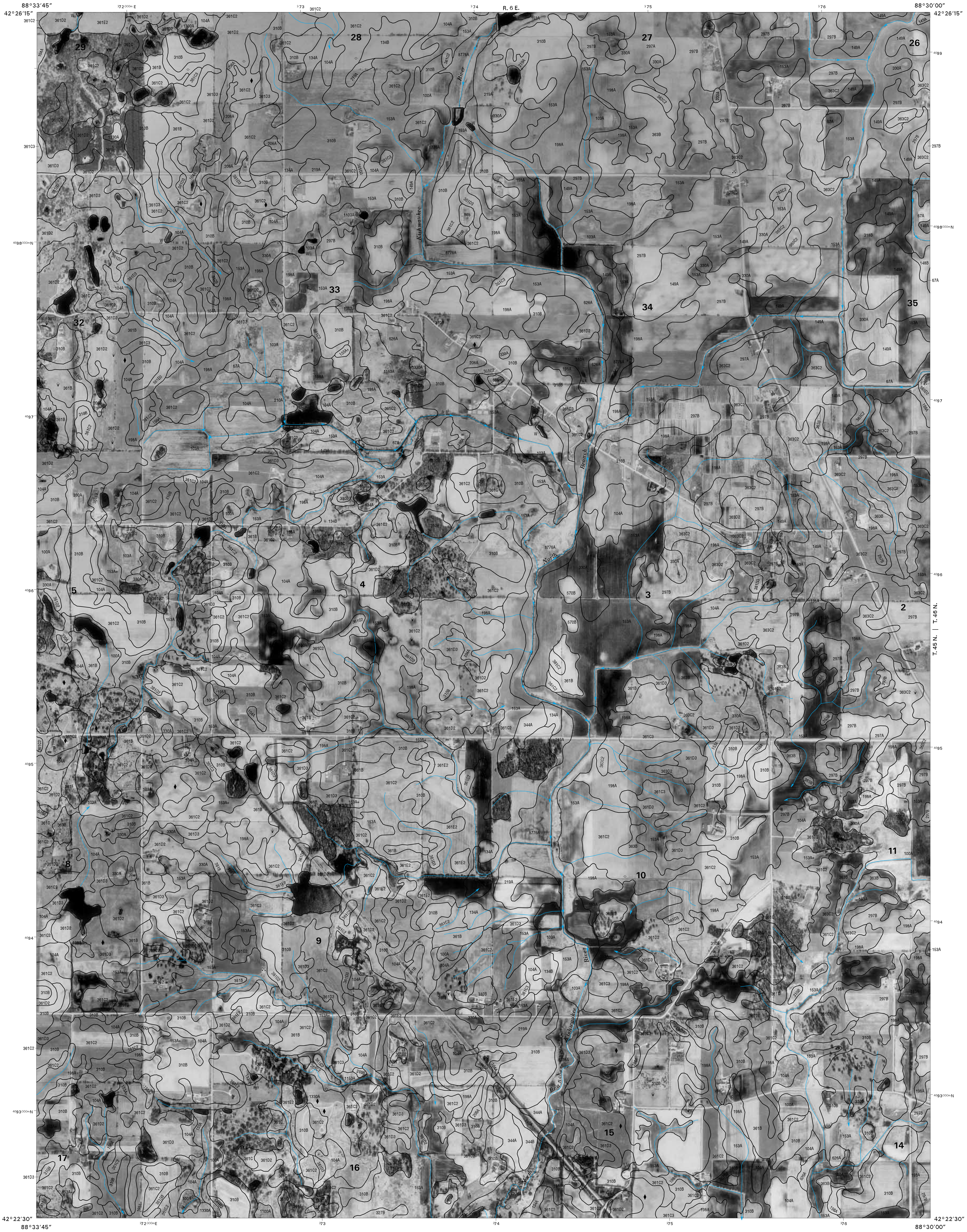
HARVARD SW, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 12 OF 54

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

MC HENRY COUNTY, ILLINOIS
HARVARD SE QUADRANGLE
SHEET NUMBER 13 OF 54



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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

1	2	3
4		5
6	7	8

1 HARVARD NW (SHEET 3)
2 HARVARD NE (SHEET 4)
3 HEBRON NW (SHEET 5)
4 HARVARD SW (SHEET 12)
5 HEBRON SW (SHEET 14)
6 MARENGO NORTH NW (SHEET 21)
7 MARENGO NORTH NE (SHEET 22)
8 WOODSTOCK NW (SHEET 23)

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HARVARD SE, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 13 OF 54

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

MC HENRY COUNTY, ILLINOIS
HEBRON SW QUADRANGLE
SHEET NUMBER 14 OF 54

88°30'00" 42°26'15" — 88°26'15" 42°26'15"

42°22'30" 88°30'00" — 42°22'30" 88°26'15"

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North American Datum of 1983 (NAD83), GRS-80 Spheroid
1000-meter ticks: Universal Transverse Mercator, zone 16.
Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES 0.5 0 0.5

FEET 500 0 500 1000 1500 2000 2500 3000 3500

KILOMETERS 0.5 0 0.5

1 HARVARD NE (SHEET 4)
2 HEBRON NW (SHEET 5)
3 HEBRON NE (SHEET 6)
4 HARVARD SE (SHEET 13)
5 HEBRON SE (SHEET 15)
6 MARENGO NORTH NE (SHEET 22)
7 WOODSTOCK NW (SHEET 23)
8 WOODSTOCK NE (SHEET 24)

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HEBRON SW, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 14 OF 54

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

MC HENRY COUNTY, ILLINOIS
HEBRON SE QUADRANGLE
SHEET NUMBER 15 OF 54

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988 aerial photography.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

1	2	3
4		5
6	7	8

1 HEBRON NW (SHEET 5)
2 HEBRON NE (SHEET 6)
3 RICHMOND NW (SHEET 7)
4 HEBRON SW (SHEET 14)
5 RICHMOND SW (SHEET 16)
6 WOODSTOCK NW (SHEET 23)
7 WOODSTOCK NE (SHEET 24)
8 MCHENRY NW (SHEET 25)

INDEX TO ADJOINING 3.75 MAPS

HEBRON SE, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 15 OF 54

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988 aerial photography.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

1. HEBRON NE (SHEET 6)
2. RICHMOND NW (SHEET 7)
3. RICHMOND NE (SHEET 8)
4. HEBRON SE (SHEET 15)
5. RICHMOND SE (SHEET 17)
6. WOODSTOCK NE (SHEET 24)
7. MCHENRY NW (SHEET 25)
8. MCHENRY NE (SHEET 26)

INDEX TO ADJOINING 3.75 MAPS

RICHMOND SW, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 16 OF 54

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

MC HENRY COUNTY, ILLINOIS
RICHMOND SE QUADRANGLE
SHEET NUMBER 17 OF 54

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988 aerial photography.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

1	2	3
4		5
6	7	8

1 RICHMOND NW (SHEET 7)
2 RICHMOND NE (SHEET 8)
3 FOX LAKE NW (SHEET 9)
4 RICHMOND SW (SHEET 16)
5 FOX LAKE SW (SHEET 18)
6 MCHENRY NW (SHEET 25)
7 MCHENRY NE (SHEET 26)
8 WAUCONDA NW (SHEET 27)

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RICHMOND SE, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 17 OF 54

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988 aerial photography.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

1	2	3
4		5
6	7	8

1 RICHMOND NE (SHEET 8)
2 FOX LAKE NW (SHEET 9)
3 FOX LAKE NE
4 RICHMOND SE (SHEET 17)
5 FOX LAKE SE
6 MCHENRY NE (SHEET 26)
7 WAUCONDA NW (SHEET 27)
8 WAUCONDA NE

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FOX LAKE SW, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 18 OF 54

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

MC HENRY COUNTY, ILLINOIS
GARDEN PRAIRIE NW QUADRANGLE
SHEET NUMBER 19 OF 54

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988 aerial photography.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

1	2	3
4		5
6	7	8

1 BELVIDERE NE SE
2 CAPRON SW (SHEET 10)
3 CAPRON SE (SHEET 11)
4 BELVIDERE NORTH NE
5 GARDEN PRAIRIE NE (SHEET 20)
6 BELVIDERE NORTH SE
7 GARDEN PRAIRIE SW (SHEET 28)
8 GARDEN PRAIRIE SE (SHEET 29)

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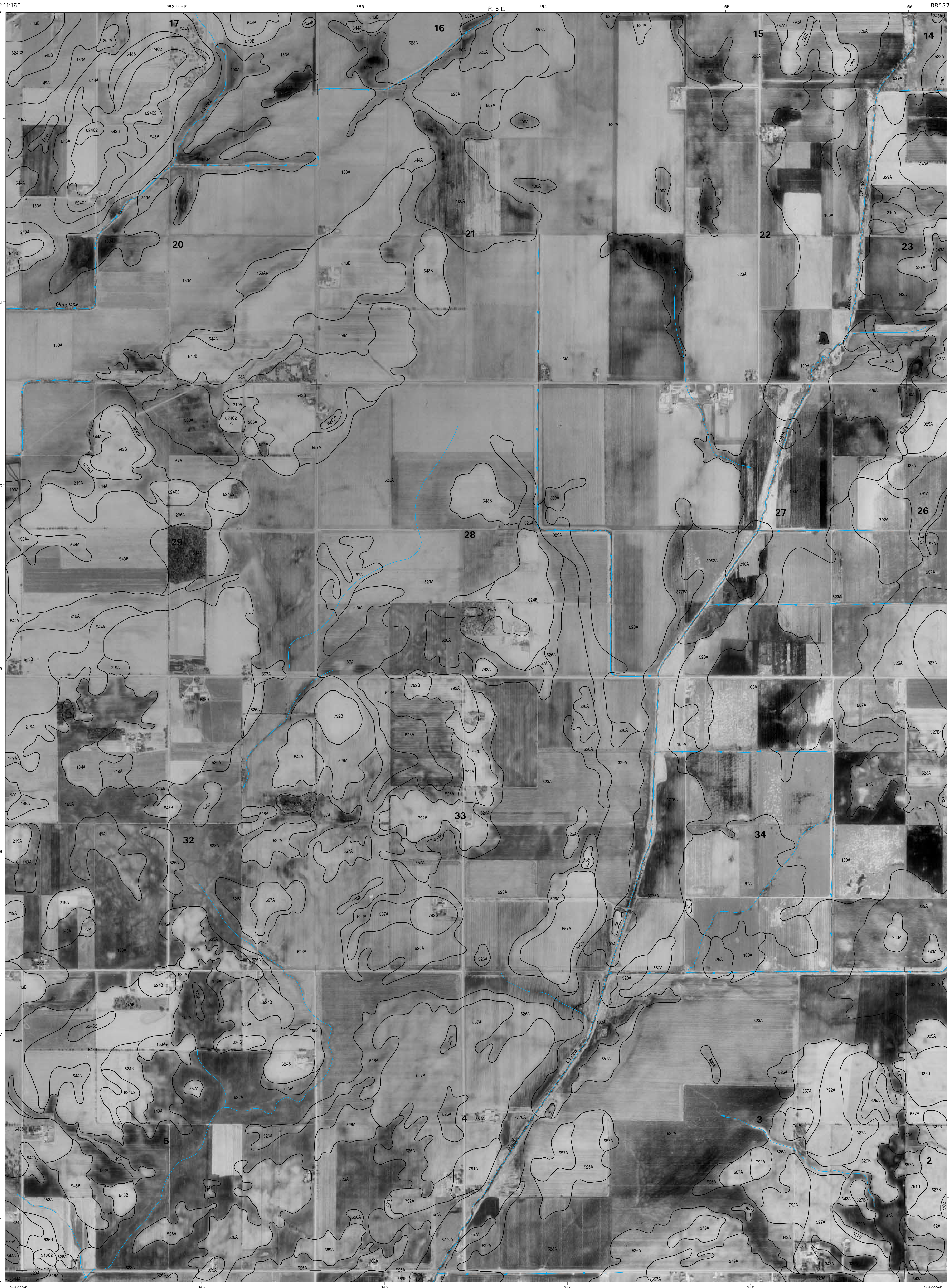
GARDEN PRAIRIE NW, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 19 OF 54

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

MC HENRY COUNTY, ILLINOIS
GARDEN PRAIRIE NE QUADRANGLE
SHEET NUMBER 20 OF 54



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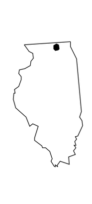
North American Datum of 1983 (NAD83). GRS-80 Spheroid
1000-meter ticks: Universal Transverse Mercator, zone 16.
Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH



QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5 MILES

500 0 500 1000 1500 2000 2500 3000 3500 FEET

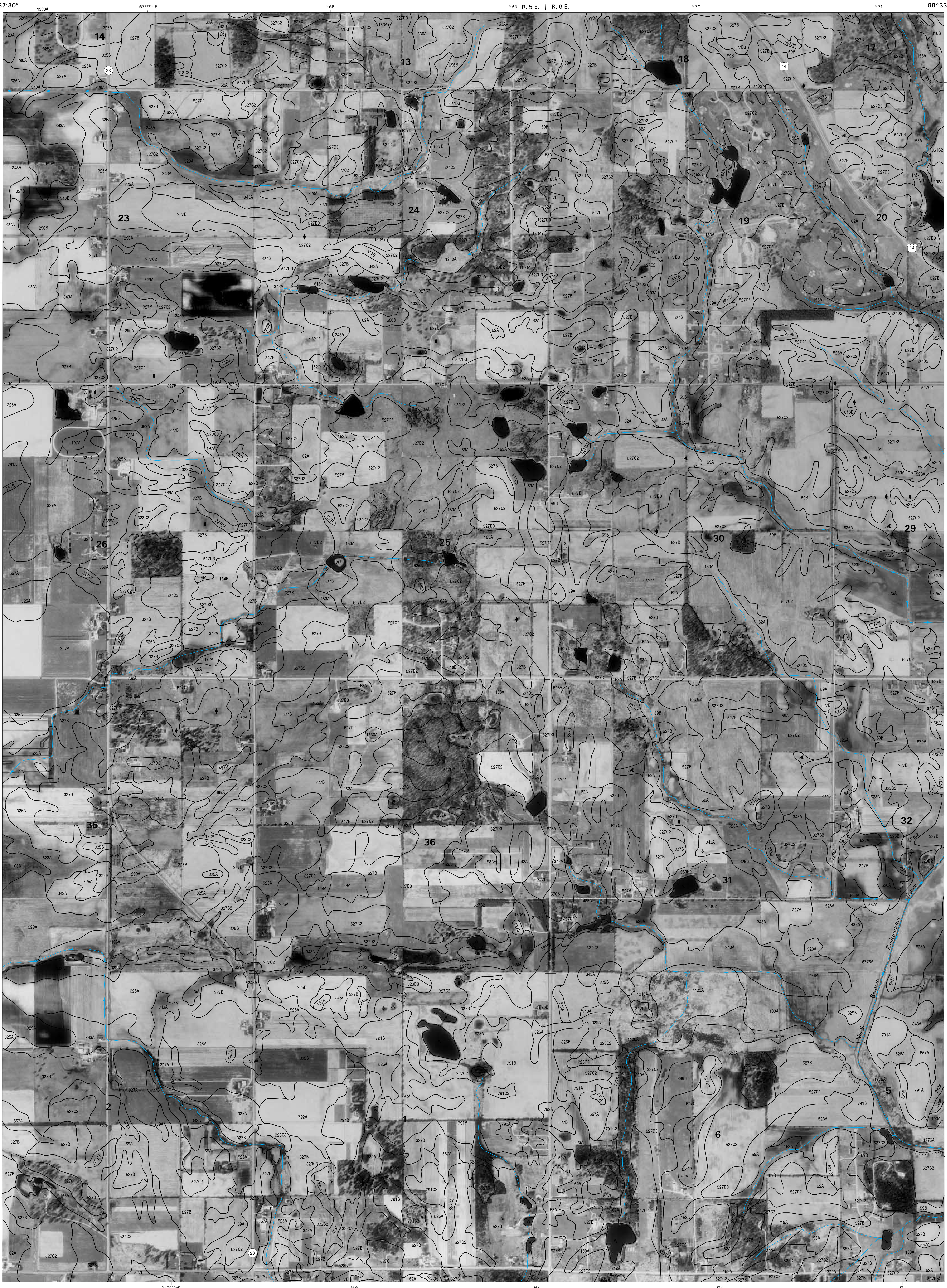
0.5 0 0.5 KILOMETERS

1	2	3
4		5
6	7	8

1 CAPRON SW (SHEET 10)
2 CAPRON SE (SHEET 11)
3 HARVARD SW (SHEET 12)
4 GARDEN PRAIRIE NW (SHEET 19)
5 MARENGO NORTH NW (SHEET 21)
6 GARDEN PRAIRIE SW (SHEET 28)
7 GARDEN PRAIRIE SE (SHEET 29)
8 MARENGO NORTH SW (SHEET 30)

INDEX TO ADJOINING 3.75 MAPS

GARDEN PRAIRIE NE, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 20 OF 54



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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

1	2	3
4		5
6	7	8

1 CAPRON SE (SHEET 11)
2 HARVARD SW (SHEET 12)
3 HARVARD SE (SHEET 13)
4 GARDEN PRAIRIE NE (SHEET 20)
5 MARENGO NORTH NE (SHEET 22)
6 GARDEN PRAIRIE SE (SHEET 29)
7 MARENGO NORTH SW (SHEET 30)
8 MARENGO NORTH SE (SHEET 31)

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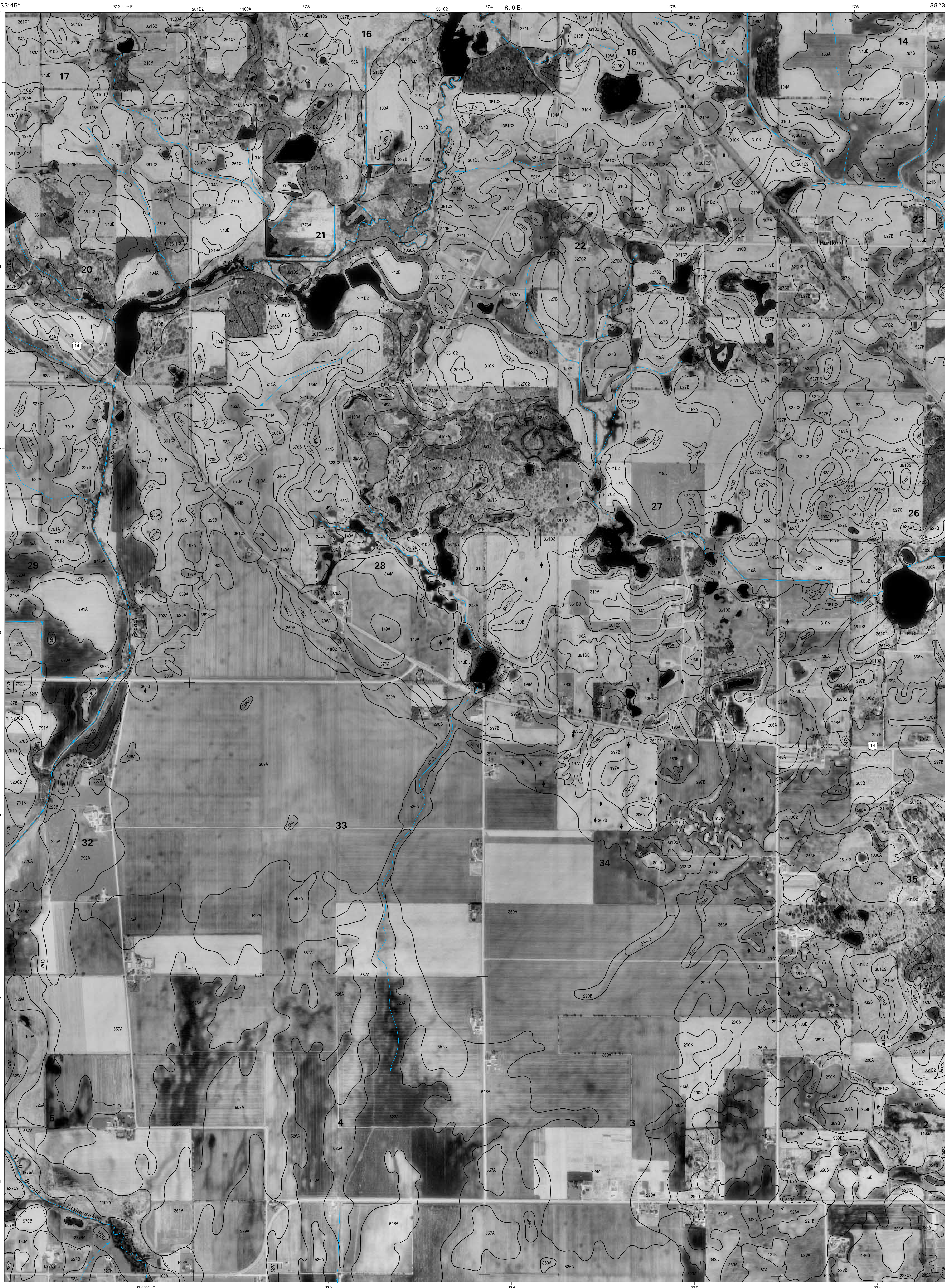
MARENGO NORTH NW, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 21 OF 54



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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

1	2	3
4		5
6	7	8

1 HARVARD SW (SHEET 12)
2 HARVARD SE (SHEET 13)
3 HEBRON SW (SHEET 14)
4 MARENGO NORTH NW (SHEET 21)
5 WOODSTOCK NW (SHEET 23)
6 MARENGO NORTH SW (SHEET 30)
7 MARENGO NORTH SE (SHEET 31)
8 WOODSTOCK SW (SHEET 32)

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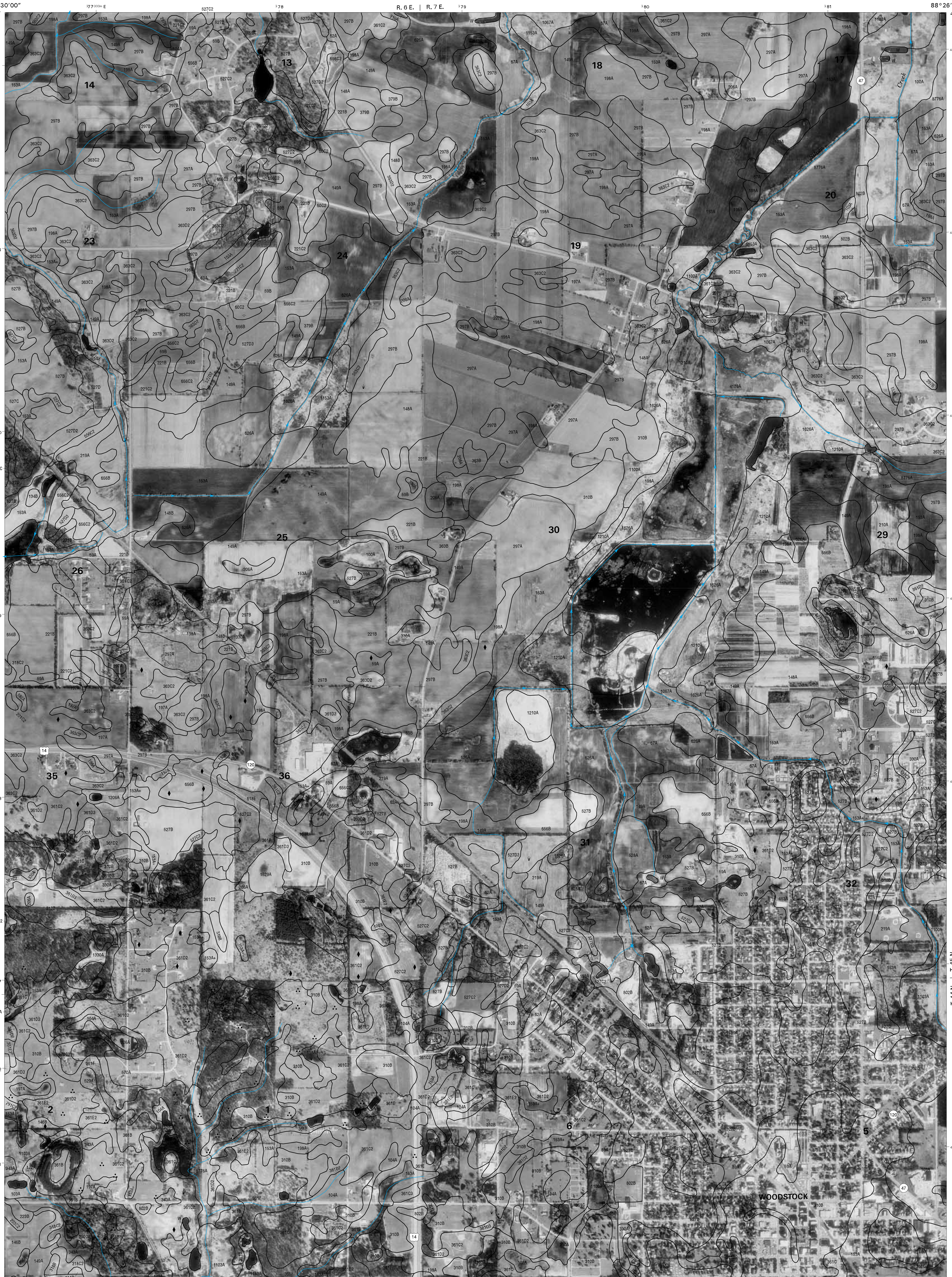
MARENGO NORTH NE, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 22 OF 54



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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

1	2	3
4		5
6	7	8

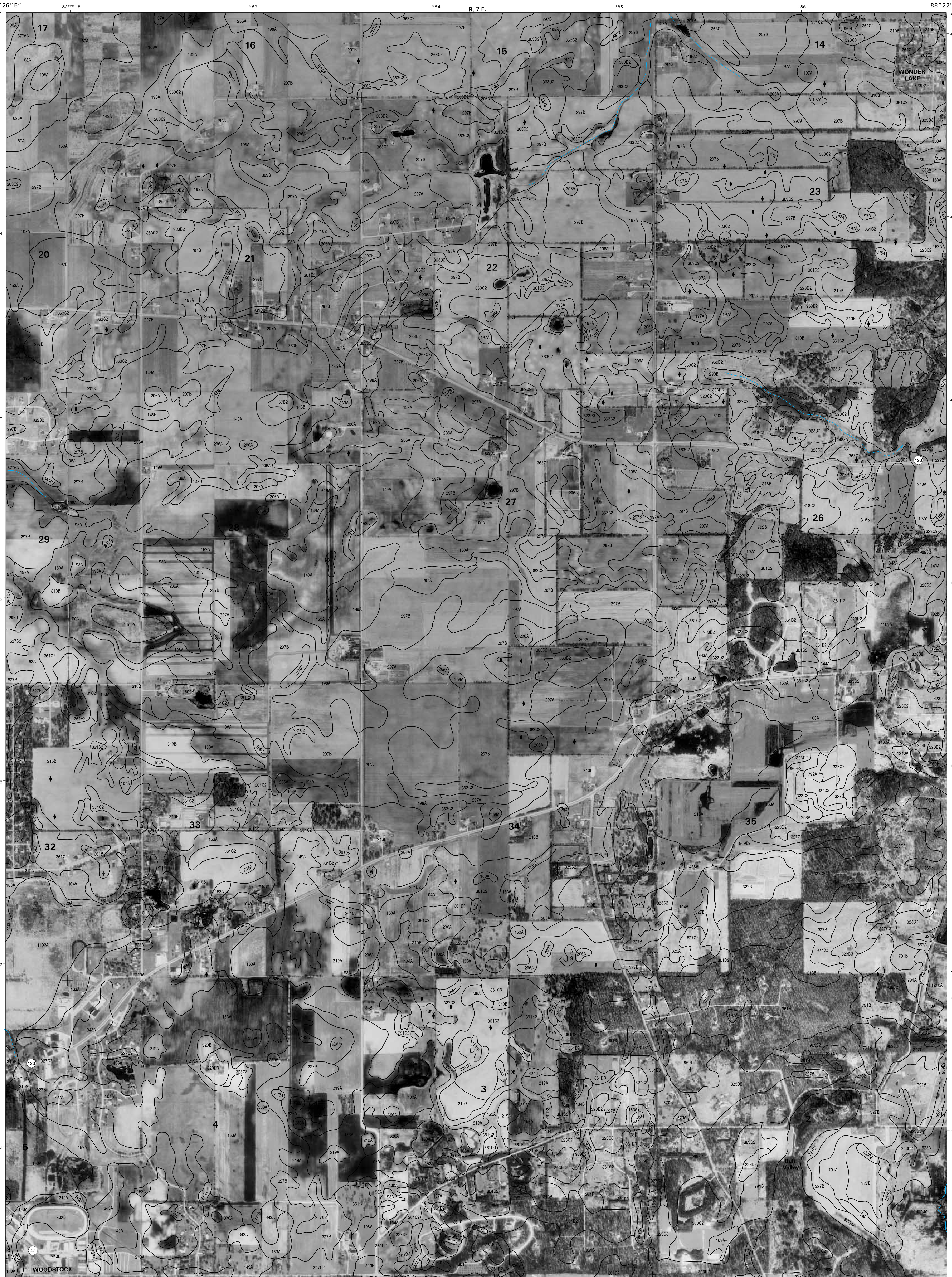
1 HARVARD SE (SHEET 13)
2 HEBRON SW (SHEET 14)
3 HEBRON SE (SHEET 15)
4 MARENGO NORTH NE (SHEET 22)
5 WOODSTOCK NE (SHEET 24)
6 MARENGO NORTH SE (SHEET 31)
7 WOODSTOCK SW (SHEET 32)
8 WOODSTOCK SE (SHEET 33)

INDEX TO ADJOINING 3.75 MAPS

WOODSTOCK NW, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 23 OF 54

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

MC HENRY COUNTY, ILLINOIS
WOODSTOCK NE QUADRANGLE
SHEET NUMBER 24 OF 54



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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

1	2	3
4		5
6	7	8

1 HEBRON SW (SHEET 14)
2 HEBRON SE (SHEET 15)
3 RICHMOND SW (SHEET 16)
4 WOODSTOCK NW (SHEET 23)
5 MCHENRY NW (SHEET 25)
6 WOODSTOCK SW (SHEET 32)
7 WOODSTOCK SE (SHEET 33)
8 MCHENRY SW (SHEET 34)

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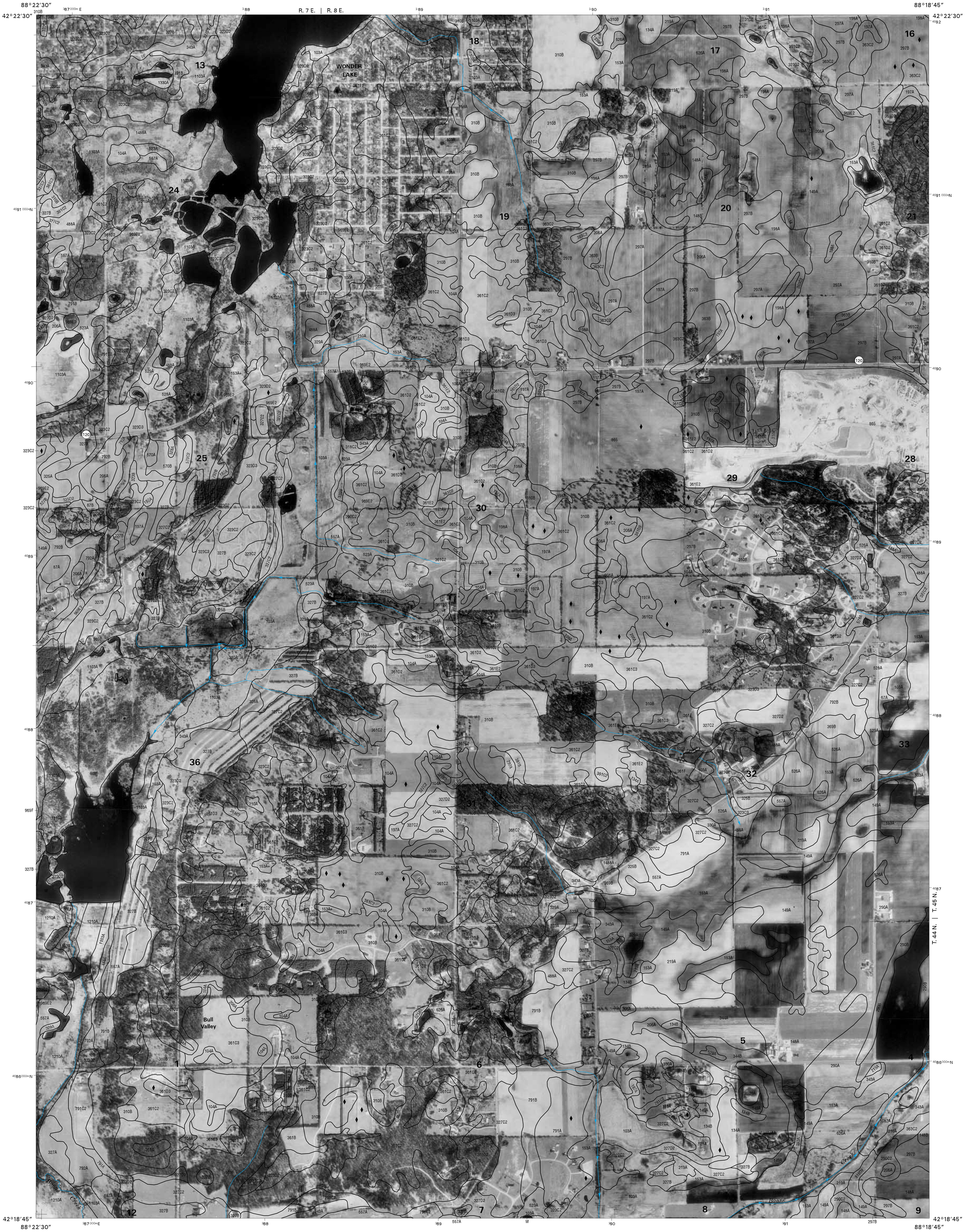
WOODSTOCK NE, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 24 OF 54



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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

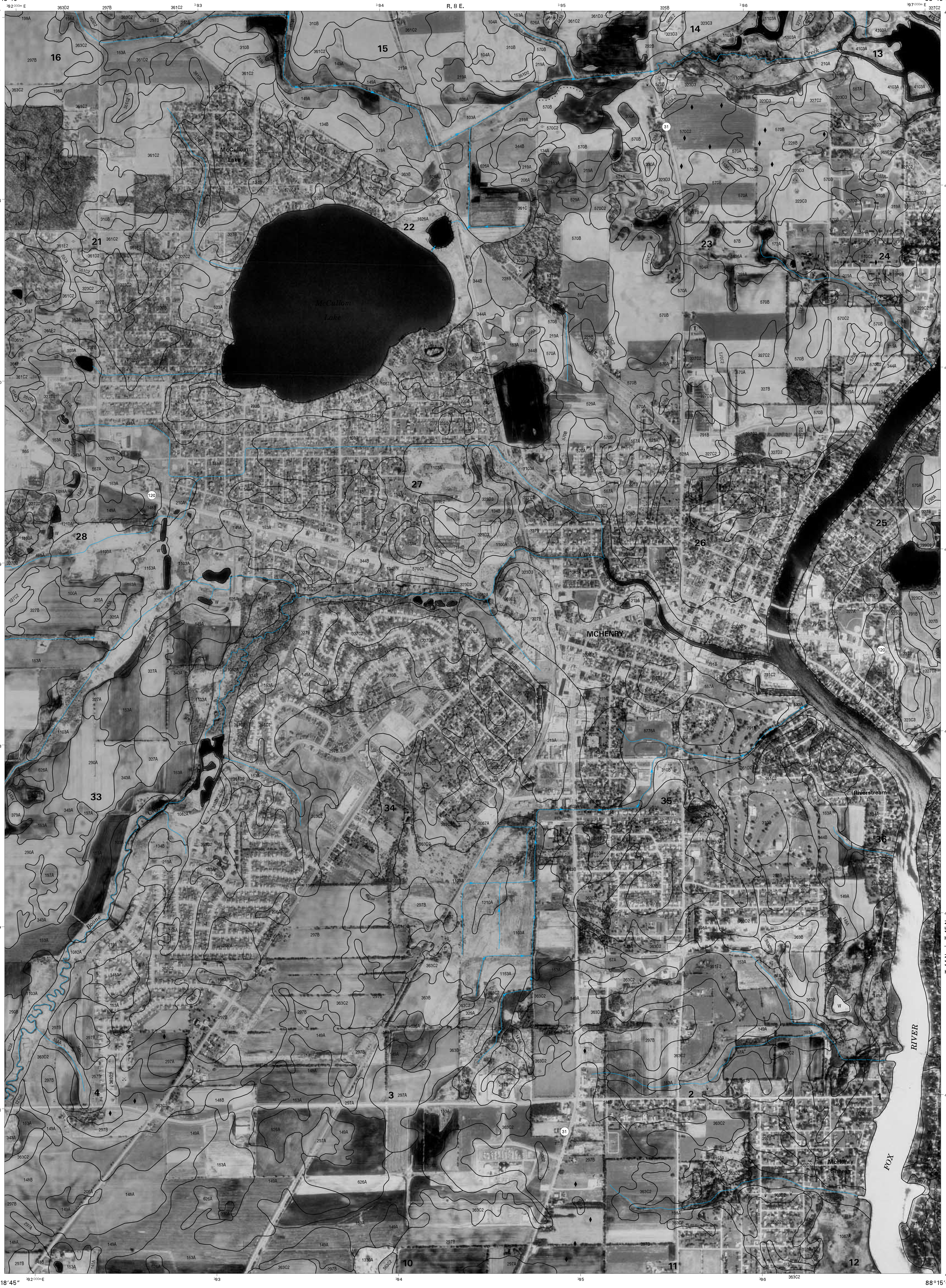
0.5 0 0.5
KILOMETERS

1	2	3
4		5
6	7	8

1 HEBRON SE (SHEET 15)
2 RICHMOND SW (SHEET 16)
3 RICHMOND SE (SHEET 17)
4 WOODSTOCK NE (SHEET 24)
5 MCHENRY NE (SHEET 26)
6 WOODSTOCK SE (SHEET 33)
7 MCHENRY SW (SHEET 34)
8 MCHENRY SE (SHEET 35)

INDEX TO ADJOINING 3.75 MAPS

MCHENRY NW, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 25 OF 54



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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

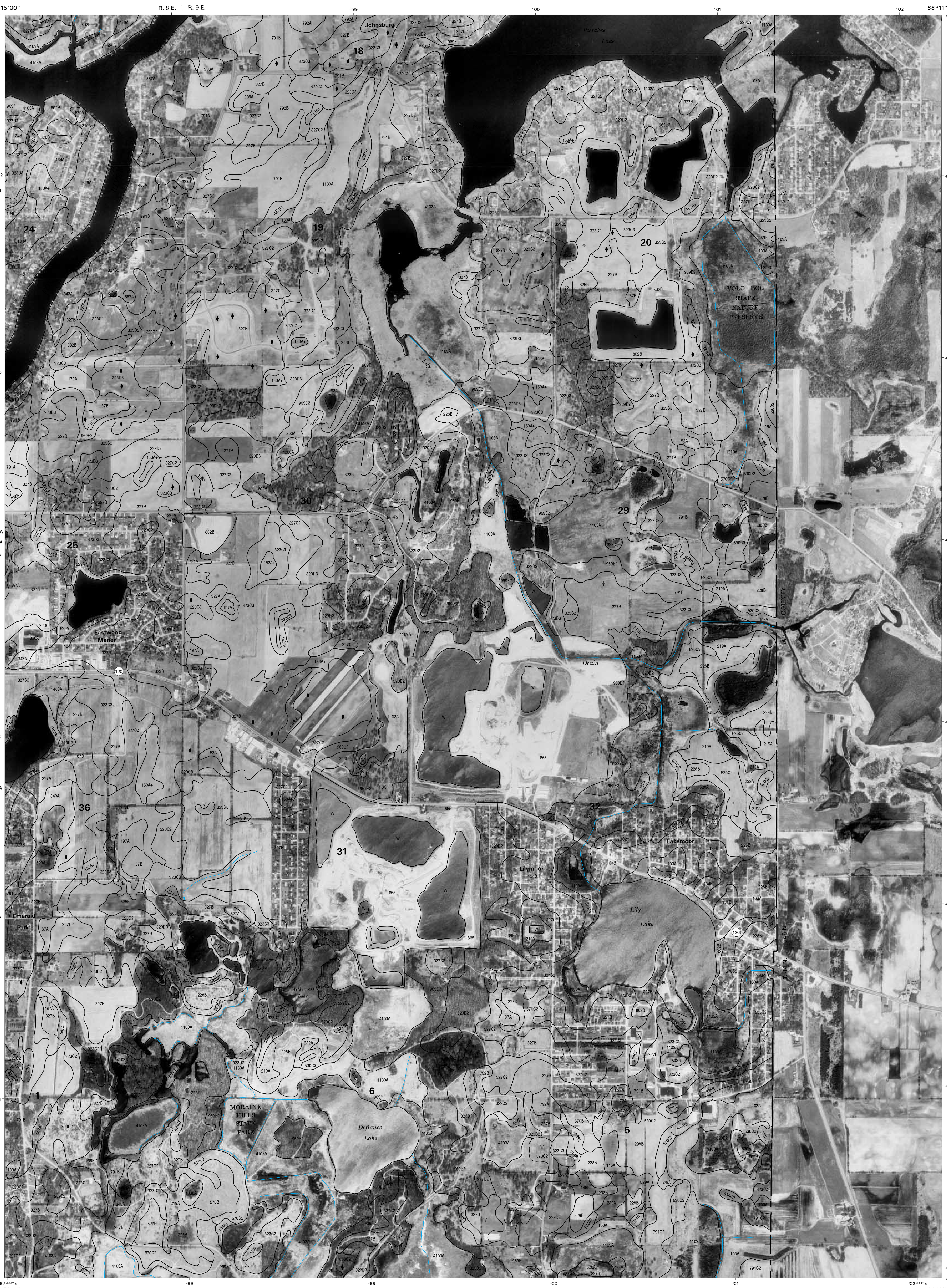
KILOMETERS

1	2	3
4		5
6	7	8

1 RICHMOND SW (SHEET 16)
2 RICHMOND SE (SHEET 17)
3 FOX LAKE SW (SHEET 18)
4 MCHENRY NW (SHEET 25)
5 WAUCONDA NW (SHEET 27)
6 MCHENRY SW (SHEET 34)
7 MCHENRY SE (SHEET 35)
8 WAUCONDA SW (SHEET 36)

INDEX TO ADJOINING 3.75 MAPS

MCHENRY NE, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 26 OF 54



SCALE 1:12000

MILES

FEET

KILOMETERS

NORTH

QUARTER QUADRANGLE LOCATION

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988 aerial photography.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

1	2	3
4		5
6	7	8

1 RICHMOND SE (SHEET 17)
2 FOX LAKE SW (SHEET 18)
3 FOX LAKE SE
4 MCHENRY NE (SHEET 26)
5 WAUCONDA NE
6 MCHENRY SE (SHEET 35)
7 WAUCONDA SW (SHEET 36)
8 WAUCONDA SE

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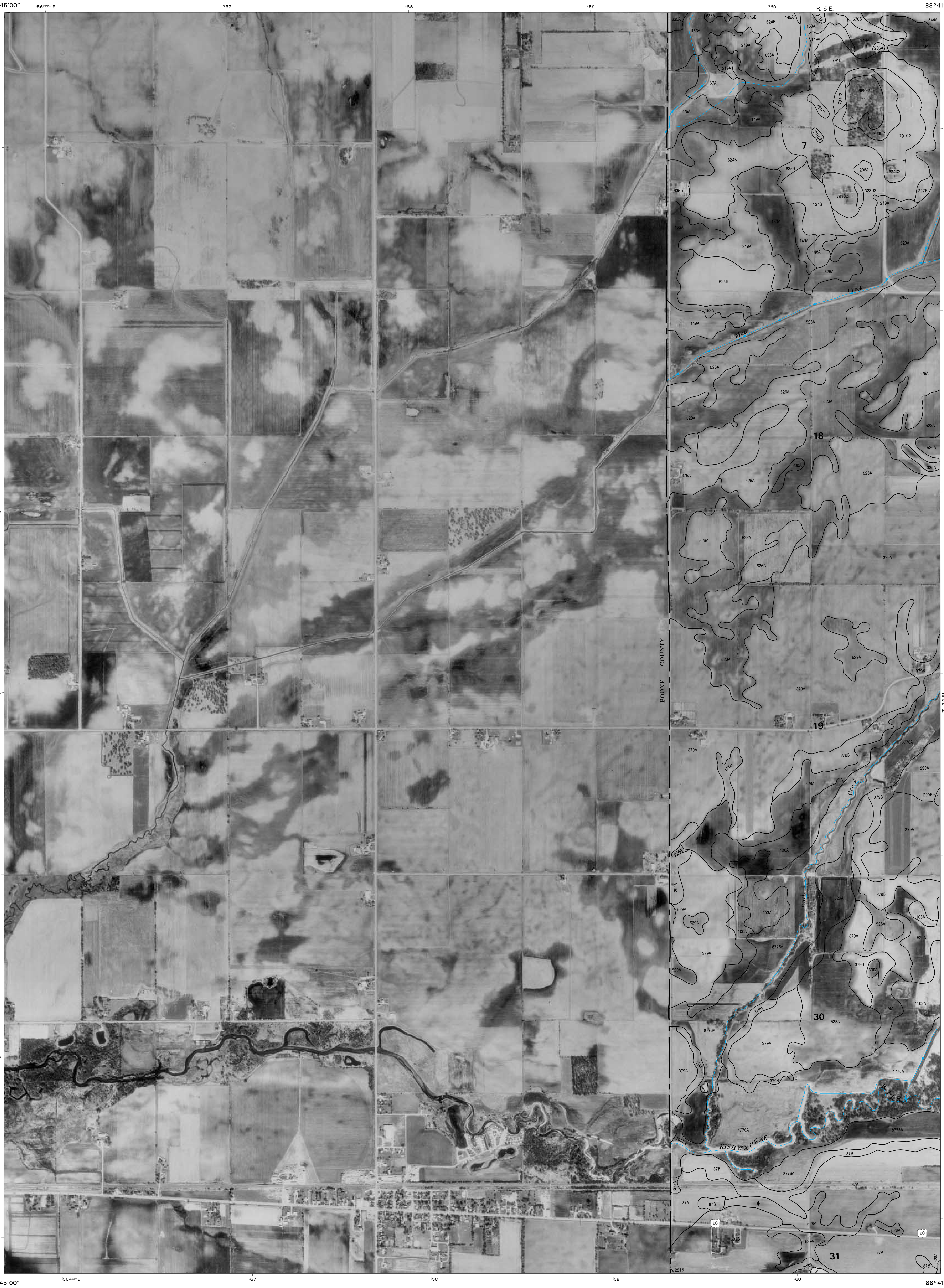
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

MC HENRY COUNTY, ILLINOIS
GARDEN PRAIRIE SW QUADRANGLE
SHEET NUMBER 28 OF 54



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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

1	2	3
4		5
6	7	8

1 BELVIDERE NORTH NE
2 GARDEN PRAIRIE NW (SHEET 19)
3 GARDEN PRAIRIE NE (SHEET 20)
4 BELVIDERE NORTH SE
5 GARDEN PRAIRIE SE (SHEET 29)
6 BELVIDERE SOUTH NE
7 RILEY NW (SHEET 37)
8 RILEY NE (SHEET 38)

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GARDEN PRAIRIE SW, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 28 OF 54

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

MC HENRY COUNTY, ILLINOIS
GARDEN PRAIRIE SE QUADRANGLE
SHEET NUMBER 29 OF 54

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988 aerial photography.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES: 0.5 — 0 — 0.5

FEET: 500 — 0 — 500 — 1000 — 1500 — 2000 — 2500 — 3000 — 3500

KILOMETERS: 0.5 — 0 — 0.5

1	2	3
4		5
6	7	8

1 GARDEN PRAIRIE NW (SHEET 19)
2 GARDEN PRAIRIE NE (SHEET 20)
3 MARENGO NORTH NW (SHEET 21)
4 GARDEN PRAIRIE SW (SHEET 28)
5 MARENGO NORTH SW (SHEET 30)
6 RILEY NW (SHEET 37)
7 RILEY NE (SHEET 38)
8 MARENGO SOUTH NW (SHEET 39)

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GARDEN PRAIRIE SE, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 29 OF 54

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

MC HENRY COUNTY, ILLINOIS
MARENGO NORTH SW QUADRANGLE
SHEET NUMBER 30 OF 54

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988 aerial photography.

North American Datum of 1983 (NAD83), GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

1	2	3
4		5
6	7	8

1 GARDEN PRAIRIE NE (SHEET 20)
2 MARENGO NORTH NW (SHEET 21)
3 MARENGO NORTH NE (SHEET 22)
4 GARDEN PRAIRIE SE (SHEET 29)
5 MARENGO NORTH SE (SHEET 31)
6 RILEY NE (SHEET 38)
7 MARENGO SOUTH NW (SHEET 39)
8 MARENGO SOUTH NE (SHEET 40)

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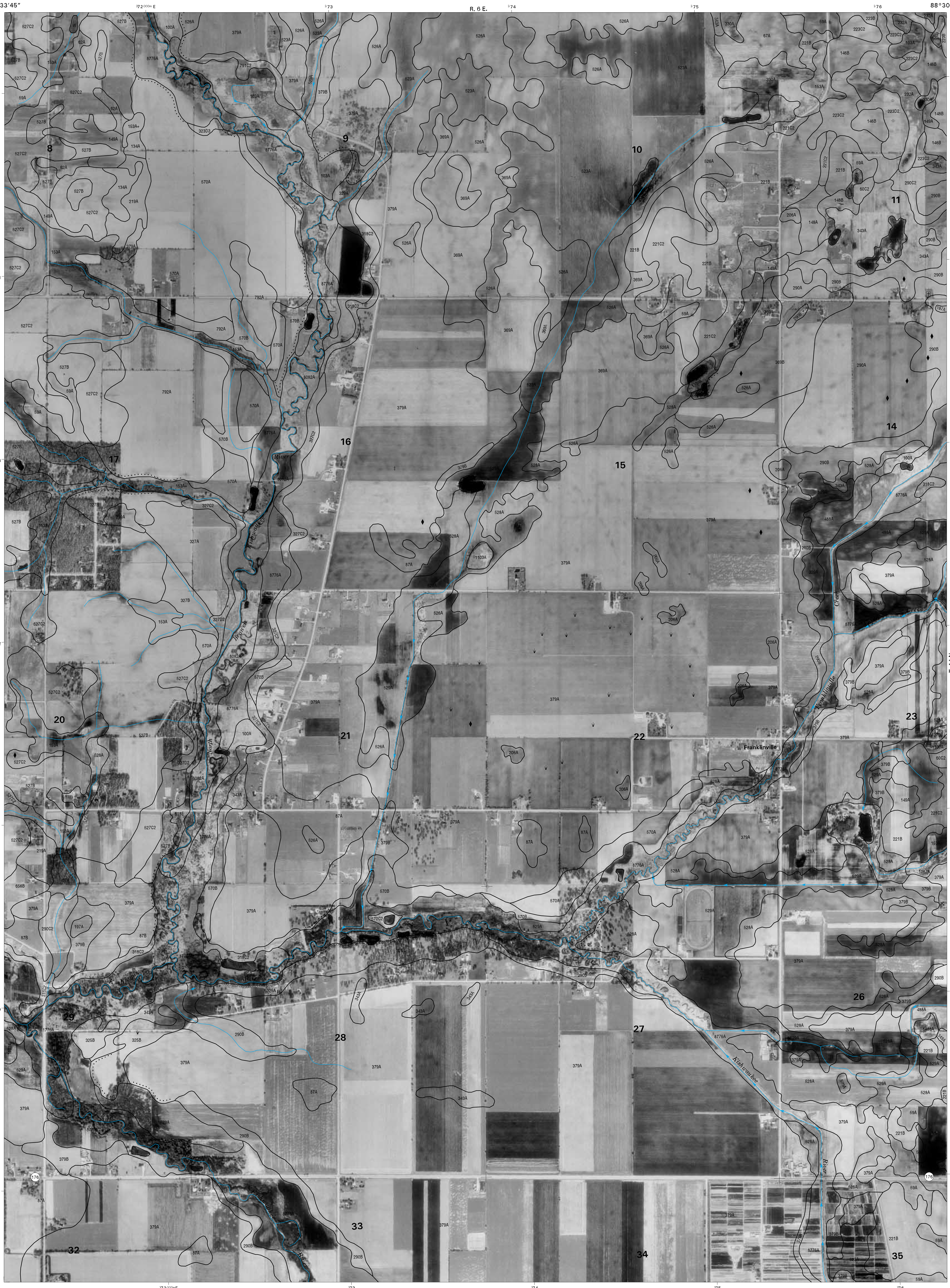
MARENGO NORTH SW, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 30 OF 54



42°18′45″ 88°33′45″ — 88°30′00″ 42°18′45″

42°15′00″ 88°33′45″ — 88°30′00″ 42°15′00″

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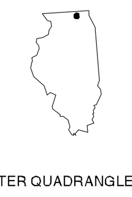
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH



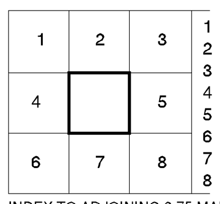
QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS



1 MARENGO NORTH NW (SHEET 21)
2 MARENGO NORTH NE (SHEET 22)
3 WOODSTOCK NW (SHEET 23)
4 MARENGO NORTH SW (SHEET 30)
5 WOODSTOCK SW (SHEET 32)
6 MARENGO SOUTH NW (SHEET 39)
7 MARENGO SOUTH NE (SHEET 40)
8 HUNTLEY NW (SHEET 41)

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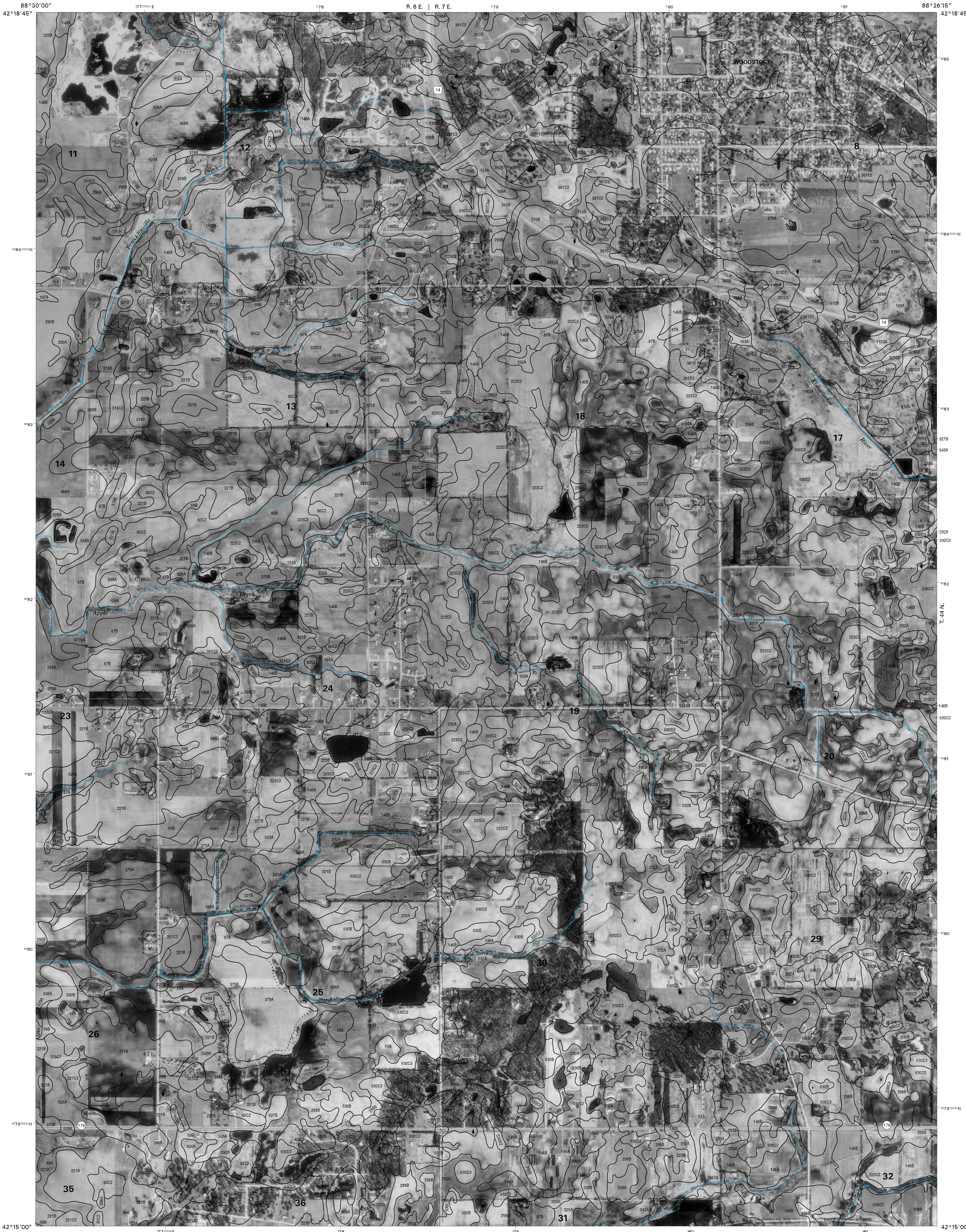
MARENGO NORTH SE, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 31 OF 54

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

MC HENRY COUNTY, ILLINOIS
WOODSTOCK SW QUADRANGLE
SHEET NUMBER 32 OF 54



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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES: 0.5 — 0 — 0.5

FEET: 500 — 0 — 500 — 1000 — 1500 — 2000 — 2500 — 3000 — 3500

KILOMETERS: 0.5 — 0 — 0.5

1	2	3
4		5
6	7	8

1 MARENGO NORTH NE (SHEET 22)
2 WOODSTOCK NW (SHEET 23)
3 WOODSTOCK NE (SHEET 24)
4 MARENGO NORTH SE (SHEET 31)
5 WOODSTOCK SE (SHEET 33)
6 MARENGO SOUTH NE (SHEET 40)
7 HUNTLEY NW (SHEET 41)
8 HUNTLEY NE (SHEET 42)

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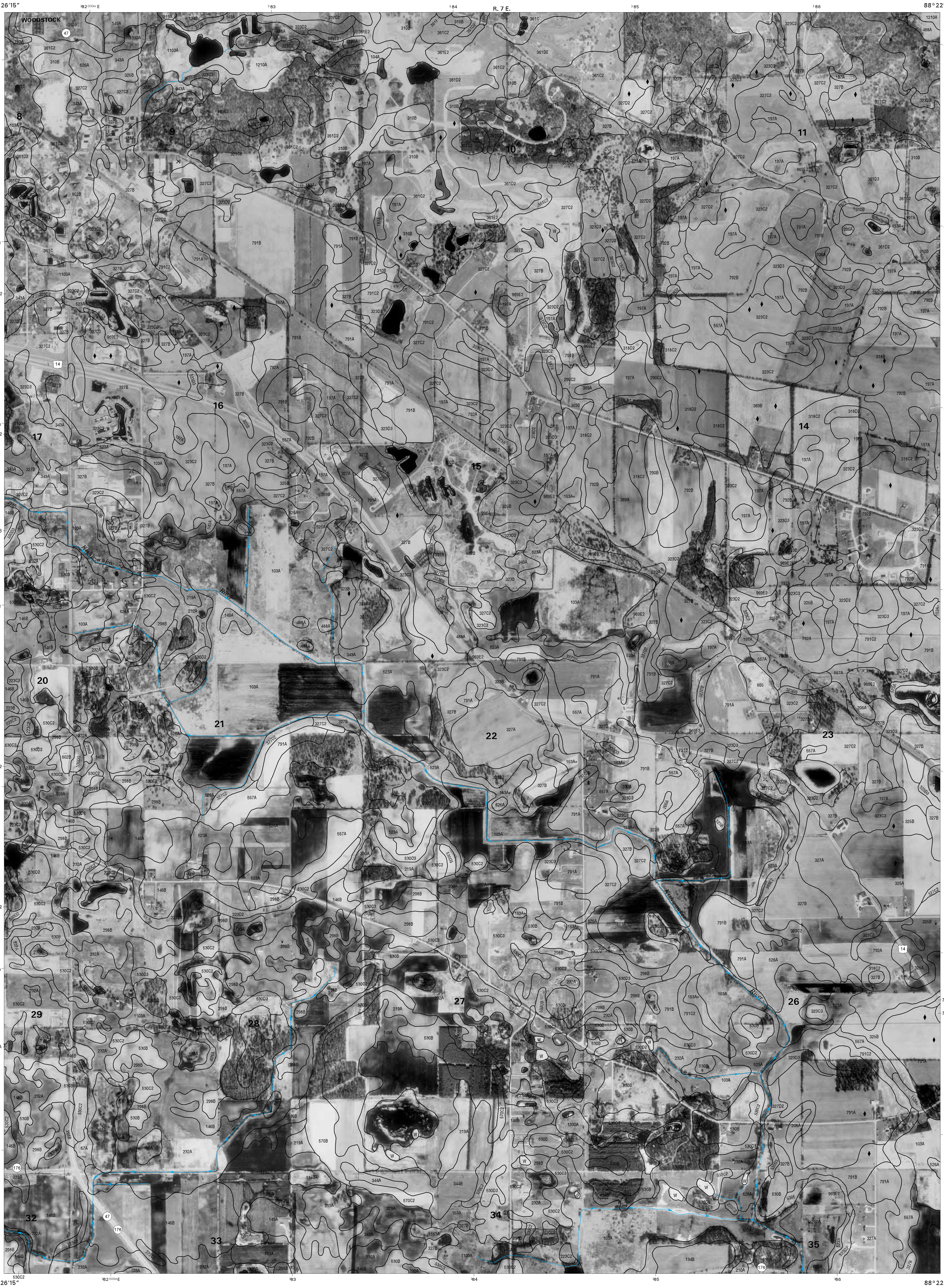
WOODSTOCK SW, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 32 OF 54

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

MC HENRY COUNTY, ILLINOIS
WOODSTOCK SE QUADRANGLE
SHEET NUMBER 33 OF 54



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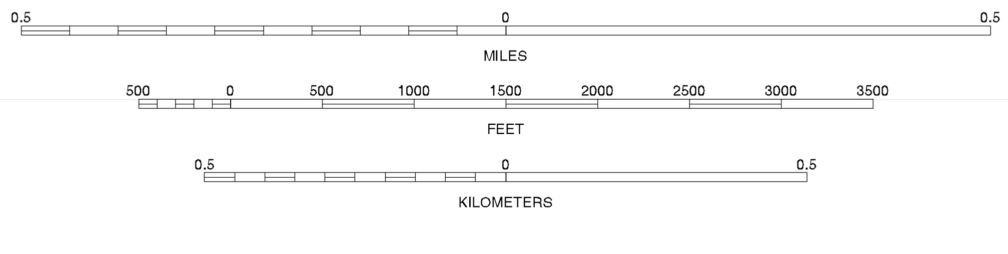
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:12000



1	2	3
4		5
6	7	8

1 WOODSTOCK NW (SHEET 23)
2 WOODSTOCK NE (SHEET 24)
3 MCHENRY NW (SHEET 25)
4 WOODSTOCK SW (SHEET 32)
5 MCHENRY SW (SHEET 34)
6 HUNTLEY NW (SHEET 41)
7 HUNTLEY NE (SHEET 42)
8 CRYSTAL LAKE NW (SHEET 43)

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WOODSTOCK SE, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 33 OF 54

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

1	2	3
4		5
6	7	8

1 WOODSTOCK NE (SHEET 24)
2 MCHENRY NW (SHEET 25)
3 MCHENRY NE (SHEET 26)
4 WOODSTOCK SE (SHEET 33)
5 MCHENRY SE (SHEET 35)
6 HUNTLEY NE (SHEET 42)
7 CRYSTAL LAKE NW (SHEET 43)
8 CRYSTAL LAKE NE (SHEET 44)

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MCHENRY SW, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 34 OF 54

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

MC HENRY COUNTY, ILLINOIS
MCHENRY SE QUADRANGLE
SHEET NUMBER 35 OF 54

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988 aerial photography.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

1	2	3
4		5
6	7	8

1 MCHENRY NW (SHEET 25)
2 MCHENRY NE (SHEET 26)
3 WAUCONDA NW (SHEET 27)
4 MCHENRY SW (SHEET 34)
5 WAUCONDA SW (SHEET 36)
6 CRYSTAL LAKE NW (SHEET 43)
7 CRYSTAL LAKE NE (SHEET 44)
8 BARRINGTON NW (SHEET 45)

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MCHENRY SE, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 35 OF 54

88°15′00″ 42°18′45″ — 88°11′15″ 42°18′45″

42°15′00″ 88°15′00″ — 42°15′00″ 88°11′15″

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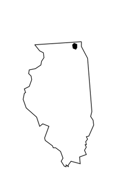
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH



QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5 MILES

500 0 500 1000 1500 2000 2500 3000 3500 FEET

0.5 0 0.5 KILOMETERS

1	2	3
4		5
6	7	8

1 MCHENRY NE (SHEET 26)
2 WAUCONDA NW (SHEET 27)
3 WAUCONDA NE
4 MCHENRY SE (SHEET 35)
5 WAUCONDA SE
6 CRYSTAL LAKE NE (SHEET 44)
7 BARRINGTON NW (SHEET 45)
8 BARRINGTON NE

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WAUCONDA SW, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 36 OF 54

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

MC HENRY COUNTY, ILLINOIS
RILEY NW QUADRANGLE
SHEET NUMBER 37 OF 54

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988 aerial photography.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

1	2	3
4		5
6	7	8

1 BELVIDERE NORTH SE
2 GARDEN PRAIRIE SW (SHEET 28)
3 GARDEN PRAIRIE SE (SHEET 29)
4 BELVIDERE SOUTH NE
5 RILEY NE (SHEET 38)
6 BELVIDERE SOUTH SE
7 RILEY SW (SHEET 46)
8 RILEY SE (SHEET 47)

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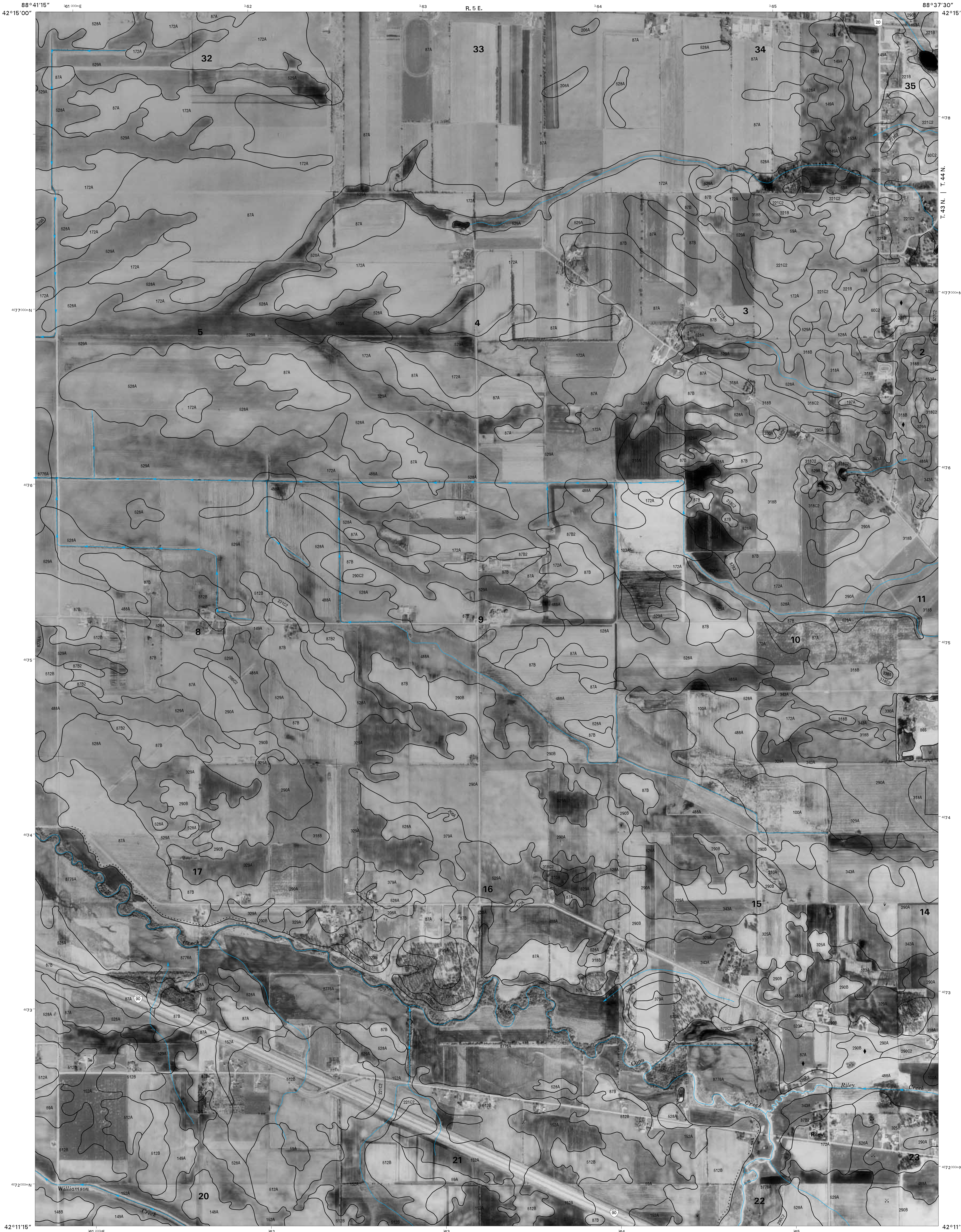
RILEY NW, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 37 OF 54

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE



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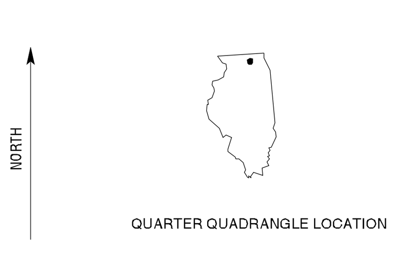
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



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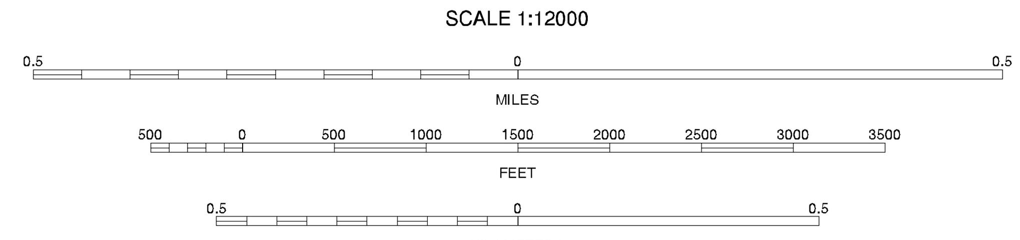

1	2	3
4		5
6	7	8

1 GARDEN PRAIRIE SW (SHEET 28)
2 GARDEN PRAIRIE SE (SHEET 29)
3 MARENGO NORTH SW (SHEET 30)
4 RILEY NW (SHEET 37)
5 MARENGO SOUTH NW (SHEET 39)
6 RILEY SW (SHEET 46)
7 RILEY SE (SHEET 47)
8 MARENGO SOUTH SW (SHEET 48)

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RILEY NE, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 38 OF 54

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

MC HENRY COUNTY, ILLINOIS
MARENGO SOUTH NW QUADRANGLE
SHEET NUMBER 39 OF 54

88°37′30″ 42°15′00″ — 88°33′45″ 42°15′00″

42°11′15″ 88°37′30″ — 42°11′15″ 88°33′45″

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES (0.5 — 0 — 0.5)

FEET (500 — 0 — 500 — 1000 — 1500 — 2000 — 2500 — 3000 — 3500)

KILOMETERS (0.5 — 0 — 0.5)

1	2	3
4		5
6	7	8

1 GARDEN PRAIRIE SE (SHEET 29)
2 MARENGO NORTH SW (SHEET 30)
3 MARENGO NORTH SE (SHEET 31)
4 RILEY NE (SHEET 38)
5 MARENGO SOUTH NE (SHEET 40)
6 RILEY SE (SHEET 47)
7 MARENGO SOUTH SW (SHEET 48)
8 MARENGO SOUTH SE (SHEET 49)

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MARENGO SOUTH NW, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 39 OF 54

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

MC HENRY COUNTY, ILLINOIS
MARENGO SOUTH NE QUADRANGLE
SHEET NUMBER 40 OF 54

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988 aerial photography.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES
500 0 500 1000 1500 2000 2500 3000 3500
FEET
0.5 0 0.5
KILOMETERS

1	2	3
4		5
6	7	8

1 MARENGO NORTH SW (SHEET 30)
2 MARENGO NORTH SE (SHEET 31)
3 WOODSTOCK SW (SHEET 32)
4 MARENGO SOUTH NW (SHEET 39)
5 HUNTLEY NW (SHEET 41)
6 MARENGO SOUTH SW (SHEET 48)
7 MARENGO SOUTH SE (SHEET 49)
8 HUNTLEY SW (SHEET 50)

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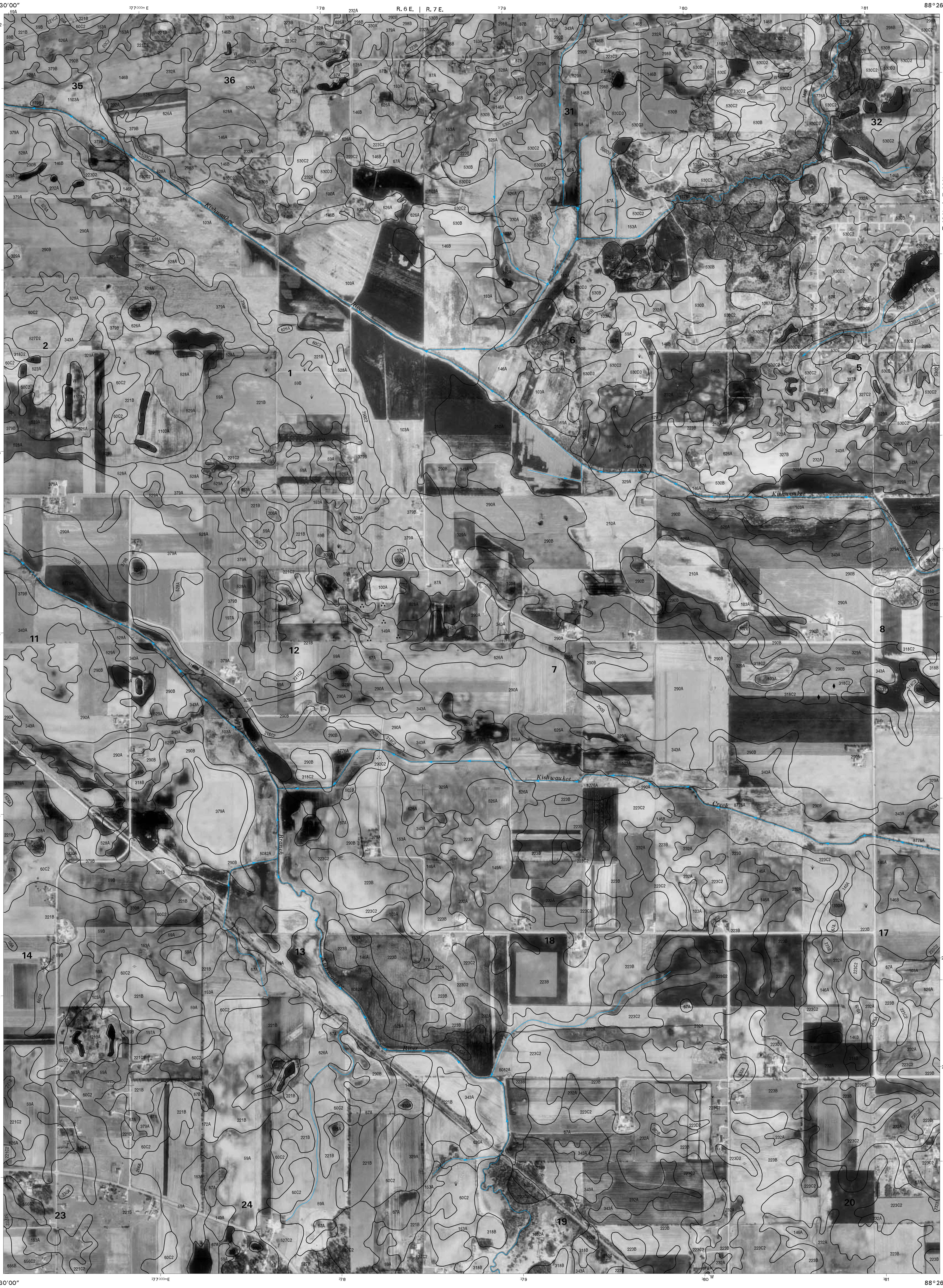
MARENGO SOUTH NE, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 40 OF 54

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

MC HENRY COUNTY, ILLINOIS
HUNTLEY NW QUADRANGLE
SHEET NUMBER 41 OF 54



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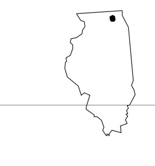
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH



QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

1	2	3
4		5
6	7	8

1 MARENGO NORTH SE (SHEET 31)
2 WOODSTOCK SW (SHEET 32)
3 WOODSTOCK SE (SHEET 33)
4 MARENGO SOUTH NE (SHEET 40)
5 HUNTLEY NE (SHEET 42)
6 MARENGO SOUTH SE (SHEET 49)
7 HUNTLEY SW (SHEET 50)
8 HUNTLEY SE (SHEET 51)

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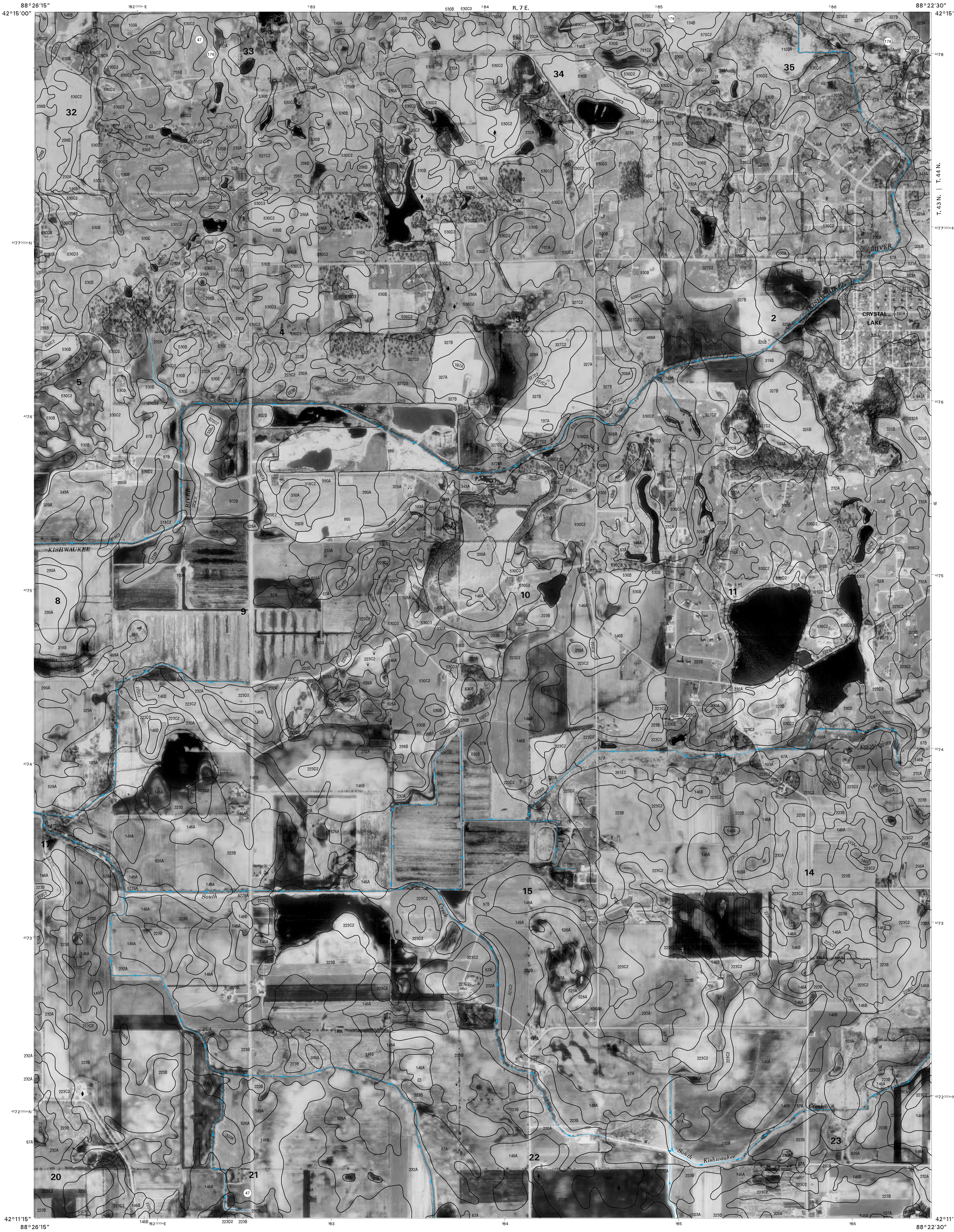
HUNTLEY NW, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 41 OF 54

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

MC HENRY COUNTY, ILLINOIS
HUNTLEY NE QUADRANGLE
SHEET NUMBER 42 OF 54



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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

1	2	3
4		5
6	7	8

1 WOODSTOCK SW (SHEET 32)
2 WOODSTOCK SE (SHEET 33)
3 MCHENRY SW (SHEET 34)
4 HUNTLEY NW (SHEET 41)
5 CRYSTAL LAKE NW (SHEET 43)
6 HUNTLEY SW (SHEET 50)
7 HUNTLEY SE (SHEET 51)
8 CRYSTAL LAKE SW (SHEET 52)

INDEX TO ADJOINING 3.75 MAPS

HUNTLEY NE, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 42 OF 54

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988 aerial photography.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

1	2	3
4		5
6	7	8

1 WOODSTOCK SE (SHEET 33)
2 MCHENRY SW (SHEET 34)
3 MCHENRY SE (SHEET 35)
4 HUNTLEY NE (SHEET 42)
5 CRYSTAL LAKE NE (SHEET 44)
6 HUNTLEY SE (SHEET 51)
7 CRYSTAL LAKE SW (SHEET 52)
8 CRYSTAL LAKE SE (SHEET 53)

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CRYSTAL LAKE NW, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 43 OF 54

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

MC HENRY COUNTY, ILLINOIS
CRYSTAL LAKE NE QUADRANGLE
SHEET NUMBER 44 OF 54

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988 aerial photography.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

1	2	3
4		5
6	7	8

1 MCHENRY SW (SHEET 34)
2 MCHENRY SE (SHEET 35)
3 WAUCONDA SW (SHEET 36)
4 CRYSTAL LAKE NW (SHEET 43)
5 BARRINGTON NW (SHEET 45)
6 CRYSTAL LAKE SW (SHEET 52)
7 CRYSTAL LAKE SE (SHEET 53)
8

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CRYSTAL LAKE NE, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 44 OF 54

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988 aerial photography.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES: 0.5 — 0 — 0.5

FEET: 500 — 0 — 500 — 1000 — 1500 — 2000 — 2500 — 3000 — 3500

KILOMETERS: 0.5 — 0 — 0.5

1	2	3
4		5
6	7	8

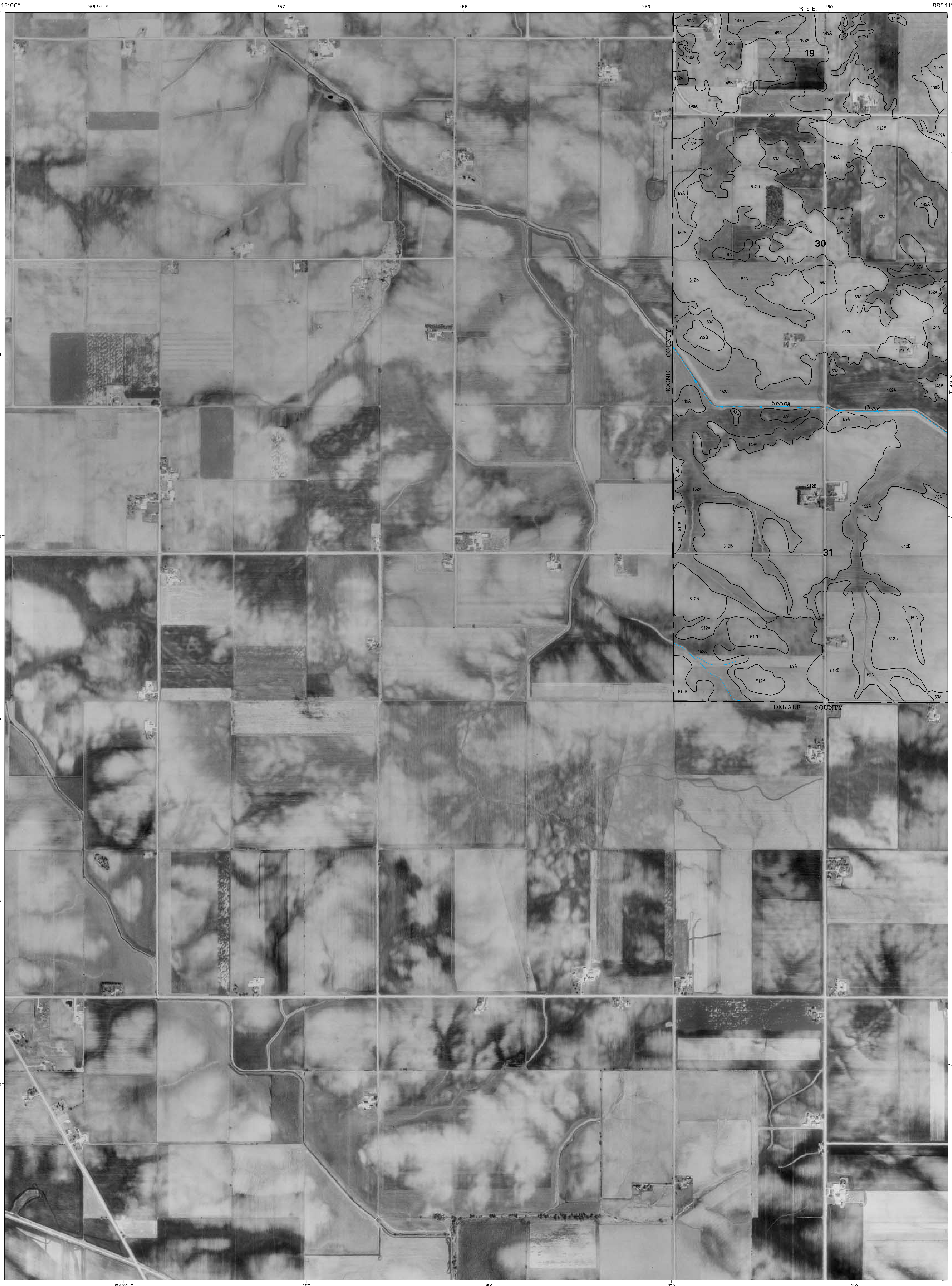
1 MCHENRY SE (SHEET 35)
2 WAUCONDA SW (SHEET 36)
3 WAUCONDA SE
4 CRYSTAL LAKE NE (SHEET 44)
5 BARRINGTON NE
6 CRYSTAL LAKE SE (SHEET 53)
7 BARRINGTON SW (SHEET 54)
8 BARRINGTON SE

INDEX TO ADJOINING 3.75 MAPS

BARRINGTON NW, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 45 OF 54

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

MC HENRY COUNTY, ILLINOIS
RILEY SW QUADRANGLE
SHEET NUMBER 46 OF 54



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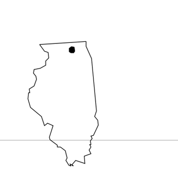
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH



QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

1	2	3
4		5
6	7	8

1 BELVIDERE SOUTH NE
2 RILEY NW (SHEET 37)
3 RILEY NE (SHEET 38)
4 BELVIDERE SOUTH SE
5 RILEY SE (SHEET 47)
6 KIRKLAND NE
7 GENOA NW
8 GENOA NE

INDEX TO ADJOINING 3.75 MAPS

RILEY SW, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 46 OF 54

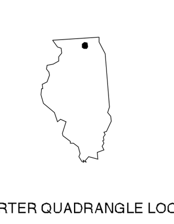
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

MC HENRY COUNTY, ILLINOIS
RILEY SE QUADRANGLE
SHEET NUMBER 47 OF 54

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988 aerial photography.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH



QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

1	2	3
4		5
6	7	8

1 RILEY NW (SHEET 37)
2 RILEY NE (SHEET 38)
3 MARENGO SOUTH NW (SHEET 39)
4 RILEY SW (SHEET 46)
5 MARENGO SOUTH SW (SHEET 48)
6 GENOA NW
7 GENOA NE
8 HAMPSHIRE NW

INDEX TO ADJOINING 3.75 MAPS

RILEY SE, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 47 OF 54

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

MC HENRY COUNTY, ILLINOIS
MARENGO SOUTH SW QUADRANGLE
SHEET NUMBER 48 OF 54

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988 aerial photography.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

1	2	3
4		5
6	7	8

1 RILEY NE (SHEET 38)
2 MARENGO SOUTH NW (SHEET 39)
3 MARENGO SOUTH NE (SHEET 40)
4 RILEY SE (SHEET 47)
5 MARENGO SOUTH SE (SHEET 49)
6 GENOA NE
7 HAMPSHIRE NW
8 HAMPSHIRE NE

INDEX TO ADJOINING 3.75 MAPS

MARENGO SOUTH SW, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 48 OF 54

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988 aerial photography.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES: 0.5 — 0 — 0.5

FEET: 500 — 0 — 500 — 1000 — 1500 — 2000 — 2500 — 3000 — 3500

KILOMETERS: 0.5 — 0 — 0.5

1	2	3
4		5
6	7	8

1 MARENGO SOUTH NW (*SHEET 39)
2 MARENGO SOUTH NE (SHEET 40)
3 HUNTLEY NW (SHEET 41)
4 MARENGO SOUTH SW (SHEET 48)
5 HUNTLEY SW (SHEET 50)
6 HAMPSHIRE NW
7 HAMPSHIRE NE
8 PINGREE GROVE NW

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MARENGO SOUTH SE, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 49 OF 54

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

88°30'00" 42°11'15" — 88°26'15" 42°11'15"

42°07'30" 88°30'00" — 42°07'30" 88°26'15"

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES (0.5 — 0 — 0.5)

FEET (500 — 0 — 500 — 1000 — 1500 — 2000 — 2500 — 3000 — 3500)

KILOMETERS (0.5 — 0 — 0.5)

1	2	3
4		5
6	7	8

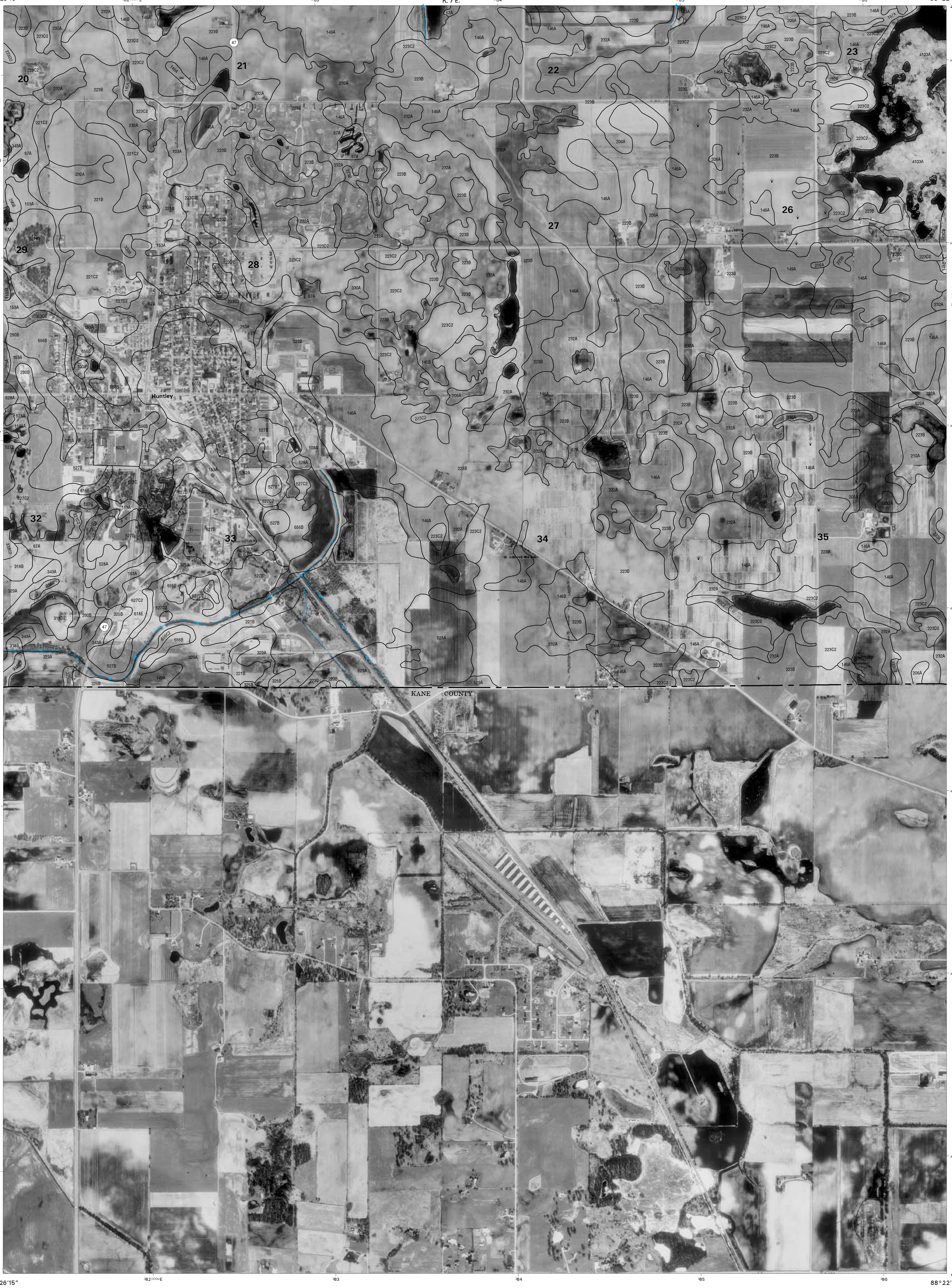
1 MARENGO SOUTH NE (SHEET 40)
2 HUNTLEY NW (SHEET 41)
3 HUNTLEY NE (SHEET 42)
4 MARENGO SOUTH SE (SHEET 49)
5 HUNTLEY SE (SHEET 51)
6 HAMPSHIRE NE
7 PINGREE GROVE NW
8 PINGREE GROVE NE

INDEX TO ADJOINING 3.75 MAPS

HUNTLEY SW, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 50 OF 54

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

MC HENRY COUNTY, ILLINOIS
HUNTLEY SE QUADRANGLE
SHEET NUMBER 51 OF 54



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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

1	2	3
4		5
6	7	8

1 HUNTLEY NW (SHEET 41)
2 HUNTLEY NE (SHEET 42)
3 CRYSTAL LAKE NW (SHEET 43)
4 HUNTLEY SW (SHEET 50)
5 CRYSTAL LAKE SW (SHEET 52)
6 PINGREE GROVE NW
7 PINGREE GROVE NE
8 ELGIN NW

INDEX TO ADJOINING 3.75 MAPS

HUNTLEY SE, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 51 OF 54

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

MC HENRY COUNTY, ILLINOIS
CRYSTAL LAKE SW QUADRANGLE
SHEET NUMBER 52 OF 54

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988 aerial photography.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

1	2	3
4		5
6	7	8

1 HUNTLEY NE (SHEET 42)
2 CRYSTAL LAKE NW (SHEET 43)
3 CRYSTAL LAKE NE (SHEET 44)
4 HUNTLEY SE (SHEET 51)
5 CRYSTAL LAKE SE (SHEET 53)
6 PINGREE GROVE NE
7 ELGIN NW
8 ELGIN NE

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CRYSTAL LAKE SW, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 52 OF 54

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988 aerial photography.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

1	2	3
4		5
6	7	8

1 CRYSTAL LAKE NW (SHEET 43)
2 CRYSTAL LAKE NE (SHEET 44)
3 BARRINGTON NW (SHEET 45)
4 CRYSTAL LAKE SW (SHEET 52)
5 BARRINGTON SW (SHEET 54)
6 ELGIN NW
7 ELGIN NE
8 STREAMWOOD NW

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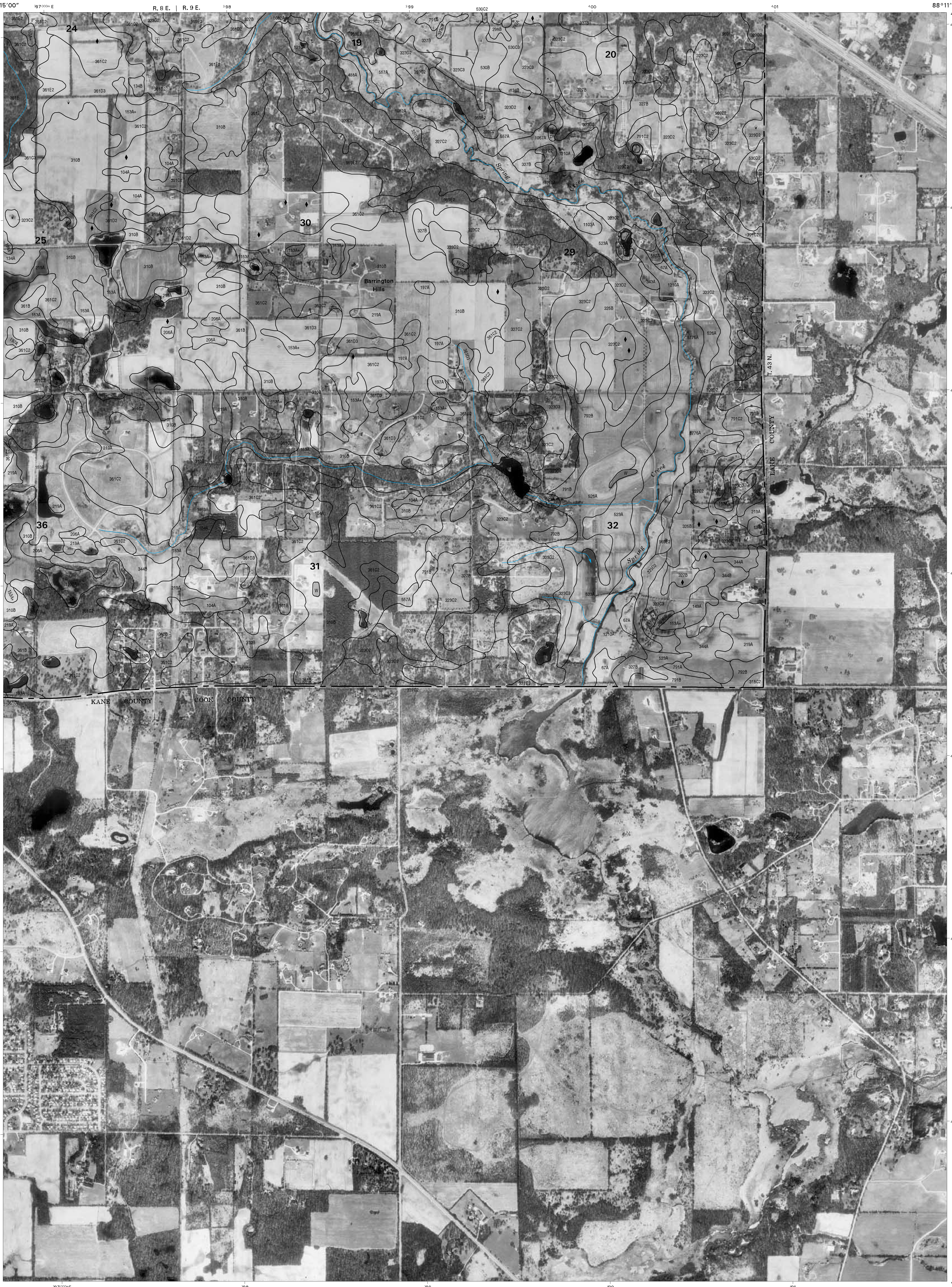
CRYSTAL LAKE SE, ILLINOIS
3.75 MINUTE SERIES
SHEET NUMBER 53 OF 54

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE



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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

1	2	3
4		5
6	7	8

1 CRYSTAL LAKE NE (SHEET 44)
2 BARRINGTON NW (SHEET 45)
3 BARRINGTON NE
4 CRYSTAL LAKE SE (SHEET 53)
5 BARRINGTON SE
6 ELGIN NE
7 STREAMWOOD NW
8 STREAMWOOD NE

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BARRINGTON SW, ILLINOIS

3.75 MINUTE SERIES
SHEET NUMBER 54 OF 54